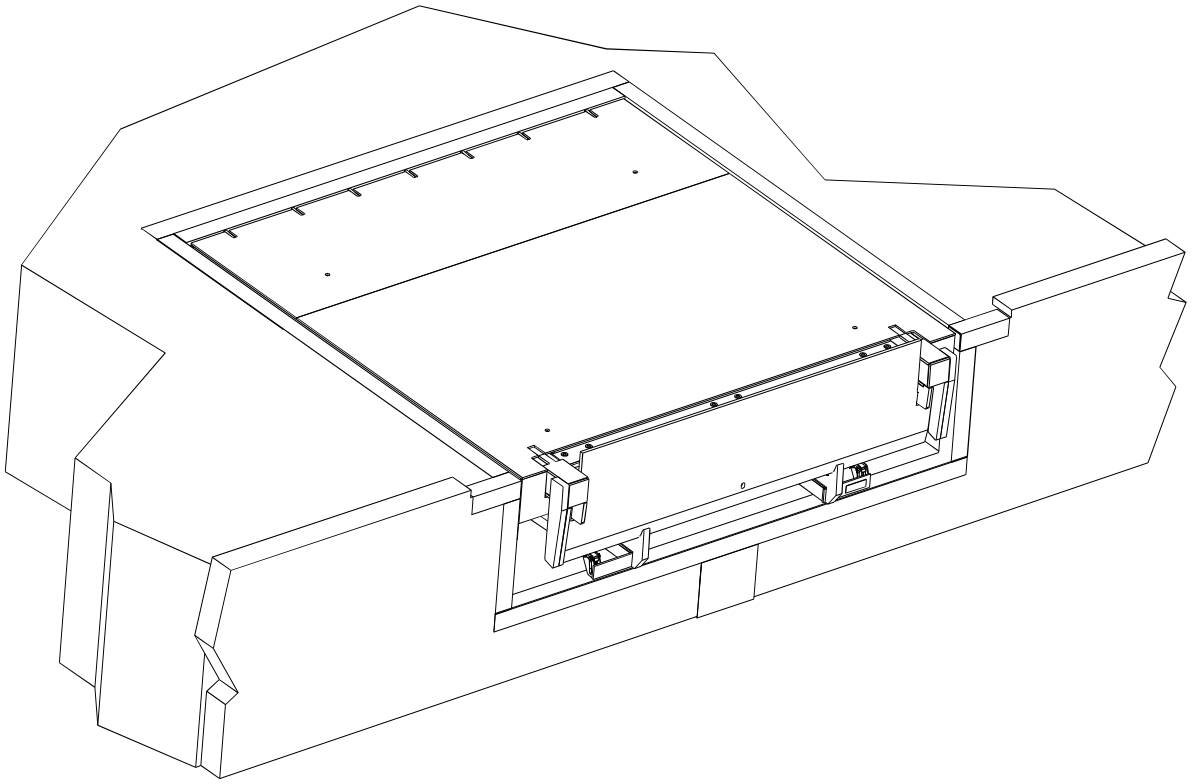
Hydraulic Dock Levelers

60-80K Capacity 8', 10', 12'

VERSADOCK™
HYDRAULIC DOCK LEVELER



This manual applies to VERSADOCK manufactured beginning February 2013 with serial numbers 61022323 and higher.

⚠WARNING

Do not install, operate or service this product unless you have read and understand the Safety Practices, Warnings, and Operating Instructions contained in this User's Manual. Failure to do so could result in death or serious injury.

User's Manual

Installation, Operations, Maintenance and Parts

Part No. 6003935D

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INTRODUCTION

Welcome and thank you for buying this dock leveler from 4Front Engineered Solutions, Inc.

This User's Manual contains information that you need to safely install, operate and maintain the dock leveler and bumpers safely. It also contains a complete parts list and information about ordering replacement parts. Please keep and read this User's Manual before using your new dock leveler.

SAFETY SIGNAL WORDS

You may find safety signal words such as DANGER, WARNING, CAUTION or NOTICE throughout this User's Manual. Their use is explained below:

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

⚠DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION

Indicates a potentially hazardous situation which, if not avoided may result in minor or moderate injury.

NOTICE

Notice is used to address practices not related to personal injury.

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SAFETY PRACTICES

⚠WARNING

Read these Safety Practices before installing, operating or servicing the dock leveler. Failure to follow the safety practices could result in death or serious injury.

If you do not understand the instructions, ask your supervisor to explain them to you or contact your local authorized distributor.

OPERATION

Use restricted to trained operators.

Follow procedures on placard posted near dock leveler.

Do not use this unit to service vehicles outside its intended working range which is 12 inches above and 16 inches below dock.

Do not operate the dock leveler with equipment, material or people on the ramp or lip.

Do not operate the dock leveler when anyone is in front of it unless they are securing the maintenance struts.

Stay clear of the dock leveler when it is moving.

Keep hands clear of hinges at all times. Do not use hands to position dock leveler ramp or lip in vehicle or to store dock leveler.

Stay clear of leveler unless lip supported by the vehicle bed or the ramp is supported by either both lip keepers at dock level or by both ramp stops at full below dock position; unsupported leveler can lower unexpectedly.

Do not use the dock leveler if it appears damaged or does not operate properly. Inform your supervisor immediately.

Do not stand in the driveway between the dock leveler and a backing vehicle.

Before chocking wheels or engaging vehicle restraint, dump air from air ride suspensions and set parking brakes.

Chock vehicle wheels or lock vehicle in place with a vehicle restraining device and set brakes before loading or unloading.

Ensure lip avoids contact with vehicle sides and cargo. If lip does not lower to vehicle bed, reposition vehicle.

OPERATION (continued)

Do not use a fork truck or other material handling equipment to lower the ramp.

Move all equipment, material or people off dock leveler and store dock leveler at dock level before allowing the vehicle to pull out.

Store dock leveler at dock level after use.

Keep away from the dock leveler lip and bumpers when the raise button is pressed or released. The lip and dock leveler are free to move and the bumpers move automatically when pressure is applied and/or released.

INSTALLATION, MAINTENANCE AND SERVICE

If the dock leveler does not operate properly using the procedures in this manual, call your local distributor for service.

Place barricades on the dock floor around the dock leveler pit and in the driveway in front of the pit while installing, maintaining or repairing the dock leveler.

Do not operate the dock leveler when anyone is in front of it unless they are securing the maintenance struts.

Do not work under the dock leveler ramp or lip unless both maintenance struts are securely supporting the leveler, and the lip maintenance bar is supporting the lip.

Disconnect the power supply and properly tag or lock out before climbing into the dock leveler pit or doing any maintenance or repair under the dock leveler.

All electrical troubleshooting or repair must be done by a qualified technician and must meet applicable codes.

Disconnect the power supply and properly tag or lock out before doing any electrical work.

If it is necessary to make troubleshooting checks inside the control box with the power on, USE EXTREME CAUTION! Do not place fingers or uninsulated tools inside the control box. Touching wires or other parts inside the control box could result in electrical shock, death or serious injury.

Keep away from the dock leveler lip and bumpers when the raise button is pressed or released. The lip and dock leveler are free to move and the bumpers move automatically when pressure is applied and/or released.

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SAFETY PRACTICES, continued

The owner should recognize the inherent danger of the interface between dock and transport vehicle. The owner should, therefore, train and instruct operators in the safe use of dock leveling devices.

When a transport vehicle is positioned as closely as practicable to a dock leveling device, there shall be at least 4" (100 mm) of overlap between the front edge of the lip and the edge of the floor or sill of the transport vehicle.

The owner shall see that all nameplates and caution and instruction markings or labels are in place and legible and that the appropriate operating and maintenance manuals are provided to users.

Nameplates, cautions, instructions, and posted warnings shall not be obscured from the view of operating or maintenance personnel for whom such warnings are intended.

Manufacturer's recommended periodic maintenance and inspection procedures in effect at date of shipment shall be followed, and written records of the performance of these procedures should be kept.

Dock leveling devices that are structurally damaged or have experienced a sudden loss of support while under load, such as might occur when a transport vehicle is pulled out from under the dock leveling device, shall be removed from service, inspected by the manufacturer's authorized representative, and repaired as needed before being placed back in service.

Modifications or alterations of dock leveling devices shall be made only with written permission of the original manufacturer.

When industrial vehicles are driven on and off transport vehicles during the loading and unloading operation, the brakes on the transport vehicle shall be applied and wheel chocks or positive restraints that provide the equivalent protection of wheel chocks engaged.

The dock leveler should never be used outside its vertical working range or outside the manufacturer's labeled rated capacity. It must also be compatible with the loading equipment and other conditions relating to the dock.

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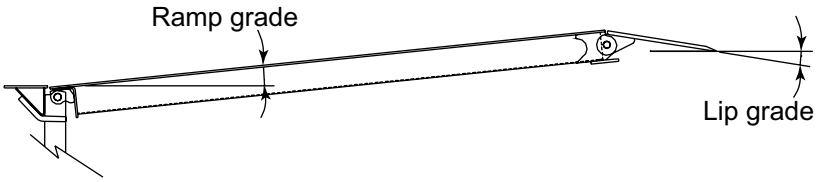
RAMP AND LIP GRADES

Fig. 1



Vehicle bed position from dock, (in.)		*Ramp and lip grades, % for each dock leveler length*					
		8" Leveler		**10" Leveler**		**12" Leveler**	
		Ramp	**Lip**	**Ramp**	**Lip**	**Ramp**	**Lip**
Above Dock	16	—	—	15.4	8.4	12.6	5.6
	14	—	—	13.6	6.5	11.1	4.1
	12	15.0	7.9	11.8	4.7	9.3	2.3
	10	12.7	5.6	10.0	2.9	7.8	0.8
	8	10.4	3.3	8.1	1.1	6.4	-0.6
	6	8.0	1.0	6.4	-0.6	5.1	-1.9
	4	5.9	-1.1	4.8	-2.2	3.7	-3.3
	2	3.9	-3.1	3.1	-3.8	2.4	-4.6
	0	1.9	-5.0	1.6	-5.4	1.0	-6.0
Below Dock	2	0.1	-7.1	0.0	-7.0	-0.4	-7.3
	4	-2.1	-9.1	-1.7	-8.7	-1.6	-8.6
	6	-4.1	-11.1	-3.3	-10.3	-3.0	-10.0
	8	-6.1	-13.1	-4.9	-11.9	-4.3	-11.4
	10	-8.1	-15.2	-6.5	-13.5	-5.7	-12.7
	12	-10.1	-17.3	-8.1	-15.2	-7.0	-14.1
	14	—	—	-9.8	-16.9	-8.4	-15.5
	16	—	—	—	—	-9.8	-16.9

Ramp and lip grade, low lip bend

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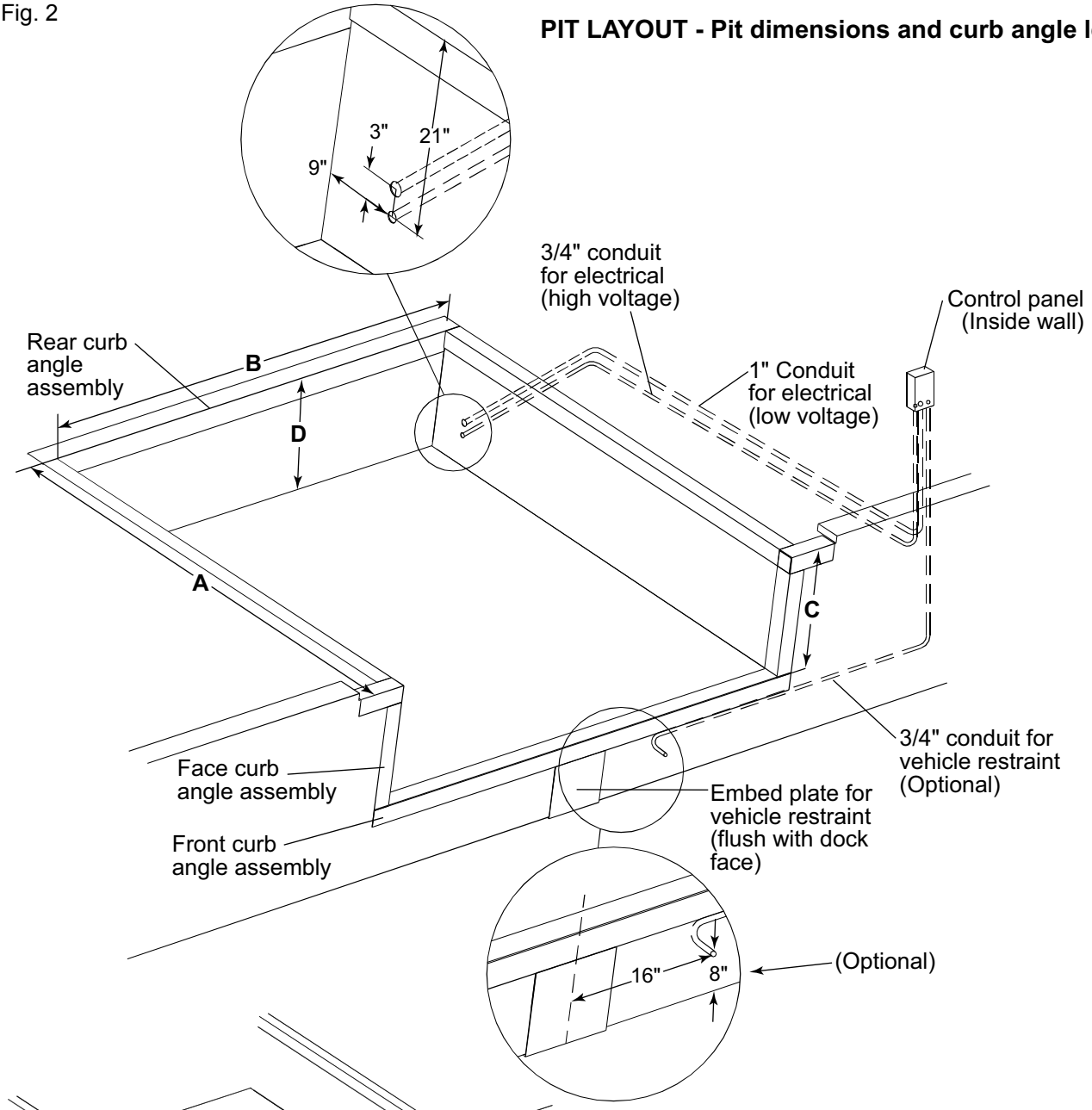
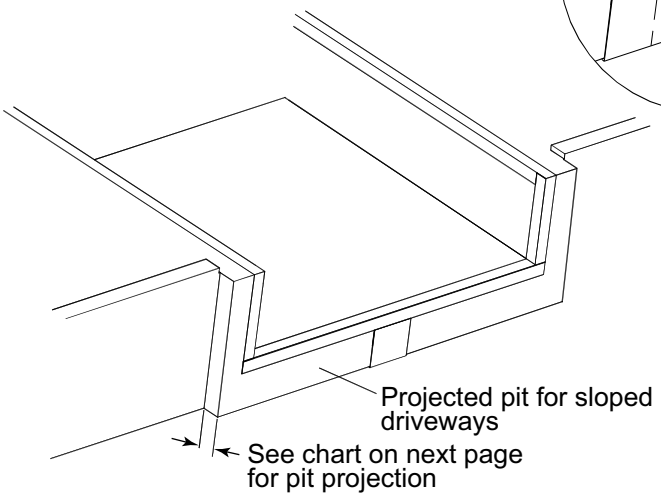
INSTALLATION

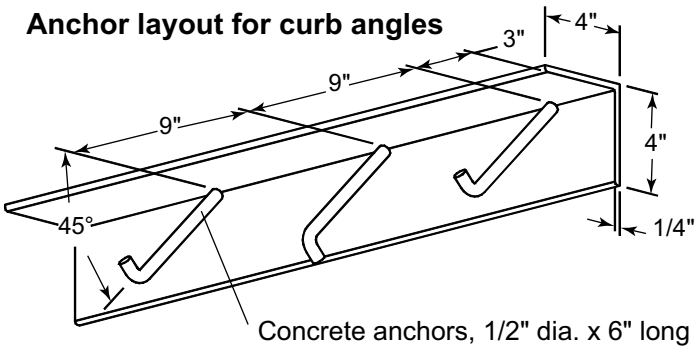
Fig. 2

PIT LAYOUT - Pit dimensions and curb angle lengths





Anchor layout for curb angles



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PIT LAYOUT - continued

Important - Concrete behind pit steel must be well vibrated. We recommend an 8" minimum thickness for pit walls, pit floor, and dock face.

Side curb angles must be 90° to dock face and to rear curb.

All angle joints to be welded securely.

Consult the factory for dock heights under 42" or over 50".

***Pit projection guide for drive conditions**

Notice: Driveway survey should be complete to determine grade and pit projection.

Driveway Grade (In Percent)	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
Pit Projection (In Inches)	0"	2"	3"	4"	5"	6"	8"	9"	10"	11"	12"

Notice: Pit dimensional tolerances are ± 1/8" on squareness, depth, width and length. 4Front Engineered Solutions, Inc. assumes no responsibility for deviations beyond these tolerances.

Nominal Size (L x W)

	8' x 9'	**10' x 9'**	**12' x 9'**
A (Pit Length)	87"	111"	135"
B (Pit Width)	109"	109"	109"
C (Front Depth)	26"	29"	32"
D (Rear Depth)	25"	28"	31"

Curb Angle Lengths
(4 x 4" x 1/4" Angle)

	Quantity	**8' x 9'**	**10' x 9'**	**12' x 9'**
Side	2	Pit Length “A” - 4"	Pit Length “A” - 4"	Pit Length “A” - 4"
Front Curb Angle Assy	1	Angle length = “B” + 8" see pit layout for concrete anchor spacing		
Rear Curb Angle Assy	1	Angle length = “A” + 8" see pit layout for concrete anchor spacing		
Face Curb Angle Assy	2	Angle length = “C” - 4" see pit layout for concrete anchor spacing		

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HYDRAULIC DOCK LEVELER INSTALLATION INSTRUCTIONS

⚠WARNING

Before installing the dock leveler, read and follow the Safety Practices on page 3 and the Operating Instructions on pages 17-18. Failure to follow the safety practices and instructions could result in death or serious injury.

PIT CHECK

1. Check entire dock leveler pit for proper construction according to certified pit drawings. Check to be sure that the pit walls are square and plumb. Check electrical service running to the control panel to assure it agrees with the phase and voltage of the pump/motor and control panel supplied with the dock leveler. See tag attached to hydraulic power unit and wiring diagram located inside the control panel.

INSTALLATION OF DOCK LEVELER

⚠WARNING

Place barricades on the dock floor around the dock leveler pit and in the driveway in front of the pit while installing, maintaining or repairing the dock leveler.

Power to control box must be from fused disconnect supplied by others. Fuse size for a dual element time delay motor rated fuse can be no greater than 225% of motor FLA. Before doing any electrical work, make certain the power is disconnected and properly tagged or locked out. All electrical work must be done by a qualified technician and must meet all applicable codes. If it is necessary to make troubleshooting checks inside the control box with the power on, USE EXTREME CAUTION. Do not place fingers or uninsulated tools inside the control box. Touching wires or other parts inside the control box could result in electrical shock, death or serious injury.

1. Mount and wire control panel. See wiring diagram located inside the control panel. Follow the wiring instructions on the wiring diagram. Run home run cables A and B from the control panel to the pit-mounted junction boxes. Run cables and wires through conduits indicated in Fig. 2.

Fig. 3

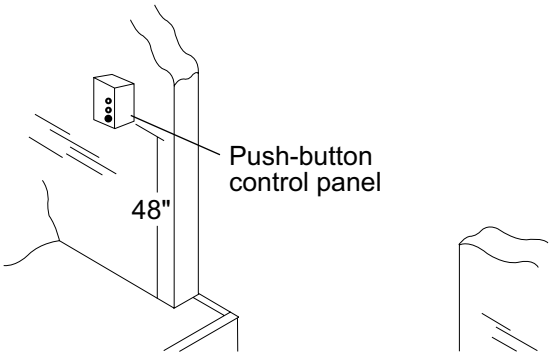
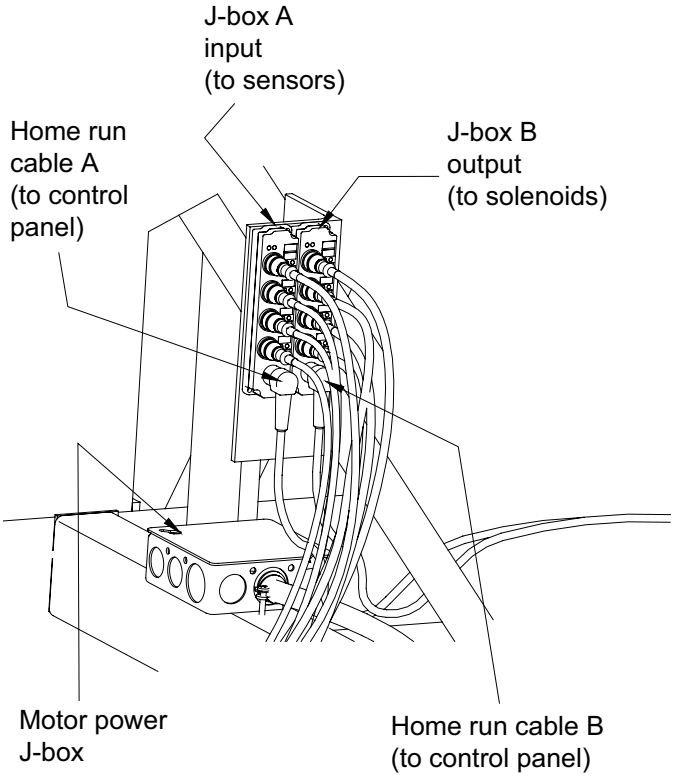


Fig. 4 - Junction box located on leveler frame in pit. See pages 14 and 27.



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⚠WARNING

Inadequate lifting equipment or practices can cause a load to fall unexpectedly Make sure the lifting chain or other lifting devices are in good condition and have a rated capacity of at least 8000 lbs for the lifting angle used. Never allow anyone to stand on or near the dock leveler when it is lifted or placed into the pit. Stand clear of the dock leveler when it is placed into the pit. Failure to follow this warning can allow the dock leveler to fall, tip or swing into people, resulting in death or serious injury.

2. Hold the leveler closed with the bolt(s) through the lip plate and/or shipping banding securing the lip plate to the frame. Install four 3/4-10 load centering eye bolts (do not use conventional 1 piece eyebolts) into the front and rear of the ramp (see Fig. 6) and hoist the leveler into the pit. The dock leveler should not be lifted in any other manner when placing into the pit. See Fig. 6 and 7.

3. Move the dock leveler back to the rear pit angle. With the rear leveler angle touching the rear pit angle, square up the sides of the pit to the sides of the leveler. The gap should be even on both sides. The rear frame angle should be within 1/8" on either sides of the pit curb angle. See Fig. 8 and 9.

4. Remove the bolt(s) and/or shipping banding from the lip plate.

5. Use a chain or suitable lifting device to lift the leveler ramp up and place the leveler ramp securely on both maintenance struts.

Fig. 5

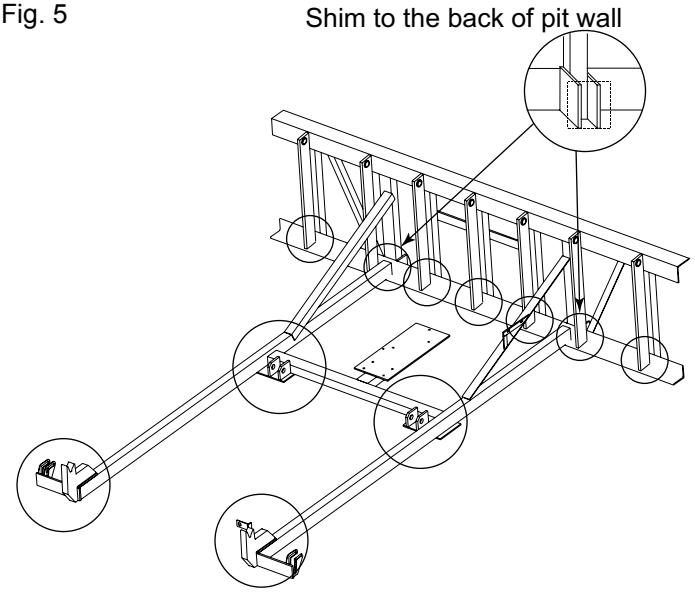
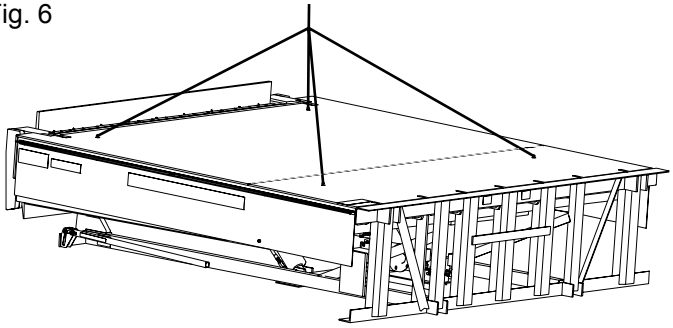


Fig. 6



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⚠DANGER

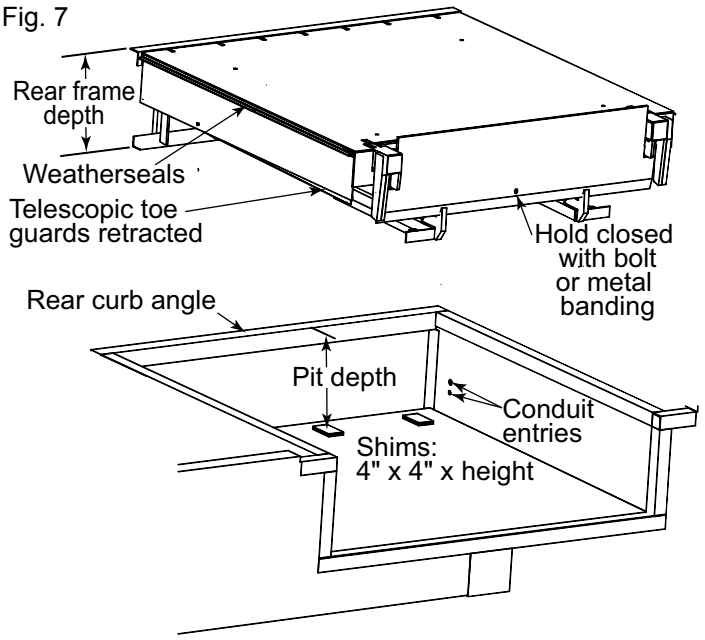
Hydraulic pressure must be maintained on the ramp or a suitable lifting device needs to hold it in the raised position until the maintenance struts are securely in place. DO NOT WORK UNDER THE DOCK LEVELER RAMP OR LIP UNLESS BOTH MAINTENANCE STRUTS ARE SECURELY SUPPORTING THE LEVELER, AND THE LIP MAINTENANCE BAR IS SUPPORTING THE LIP.

6. Using a pry bar, pry up the rear frame, one side at a time. Stack 4" x 4" steel shims of the appropriate thickness centered underneath each of the 7 rear hinge supports and between the rear frame and the rear pit wall at each of the positions shown in Fig. 5.

7. Check the alignment of the top of the subframe and the top of the rear pit curb angle. The top of the subframe should be flush with the top of the rear pit curb angle. If a flush condition cannot be achieved, the frame should be a maximum of 1/16" lower than the curb angle. Add or subtract shims as required.

8. Place 4" x 4" steel shims of appropriate thickness between the lifting cylinder mounting pads and the pit floor. See page 5.

Fig. 7



NOTICE

Before welding the rear frame, cover the weather seals with a sheet of steel to prevent setting fire to the weather seals. Failure to do so may result in property damage.

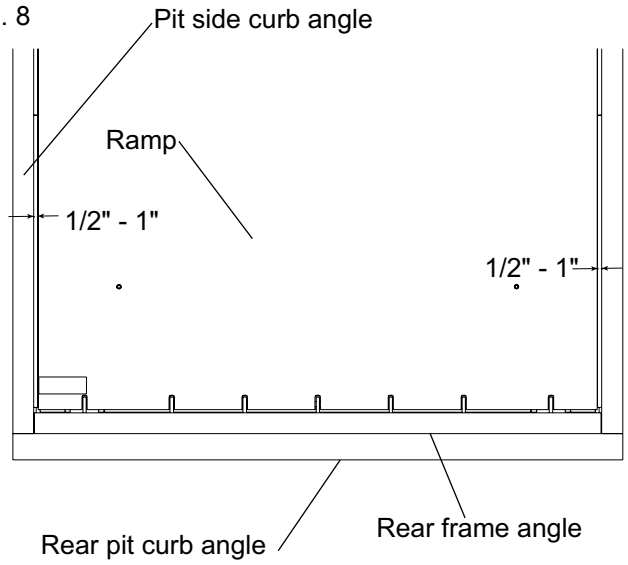
Welding with the dock leveler's power connected can damage electrical components. If the dock leveler has previously been electrically connected, turn off power to control box before welding and disconnect the ground wire(s). Ground welder to dock leveler frame. Failure to do so may result in property damage.

Be certain that the rear frame is touching the rear pit curb angle before welding.

Note: At this point the electrician should complete the wiring between the control panel and the junction box. With electrical power available, return the leveler to the stored position.

Shim the front end of the dock leveler LEVEL with the rear frame of the leveler. If front and rear pit curb angles are not parallel do not attempt to shim dock leveler supports to match pit angles. The lip keepers and lip plate must be parallel for proper operation of the dock leveler. Add or subtract shims as required. See Fig. 9 and 10.

Fig. 8



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NOTICE

If the pit is out-of-square, the resulting gap between the rear frame and the rear curb angle should be shimmed as necessary at the weld locations. Use steel shim(s) equal to the weld length and weld in place.

See Fig. 9 and 10.

NOTICE

Disconnect power and ground before welding.

9. When the top of the rear frame has been leveled with the rear pit curb angle, place 3" x 12" steel shims of the appropriate thickness underneath the front of the leveler subframe and the maintenance struts supports. These shims should be flush with the front of the leveler frame, below or behind the lip keepers. After verifying that both sides of the dock leveler are evenly spaced to the pit sides, finish weld the rear frame angle to the pit rear curb angle. See Fig. 9 and 5.

10. Weld front of frame to shims, and shims to front curb angle with 3" long welds on the front and sides of the shims.

NOTICE

Shims must be welded in under the maintenance strut brackets and lip keepers and between the back frame and pit back wall.

11. Weld rear hinge support shims together and to the dock leveler subframe under each rear hinge support. All welds are to be 1" long minimum.

12. Reconnect power and ground.

Fig. 9

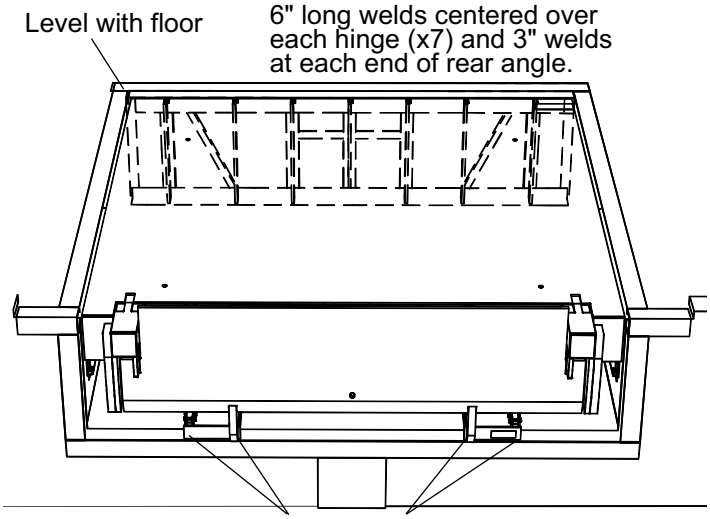
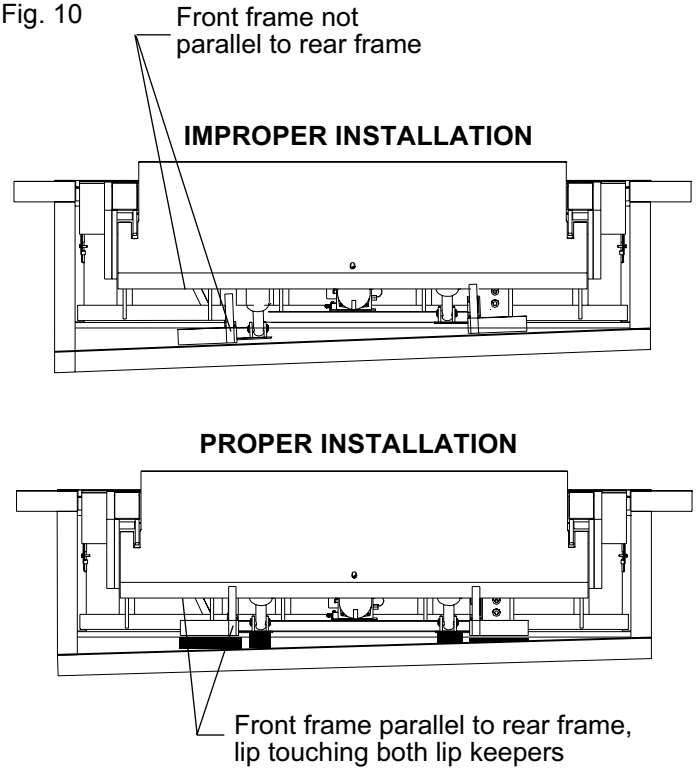


Fig. 10



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⚠WARNING

Keep away from the dock leveler lip and bumpers when the raise button is pressed or released. The lip and dock leveler are free to move and the bumpers move automatically when pressure is applied and/or released.

12. Read Safety Practices on page 3 and Operating Instructions on pages 16-17. With electrical power available, use the controls to operate the dock leveler through the complete cycle to check operation. Ensure the leveler operates properly.

13. Using the electrical power use the procedure shown on page 13 to place the leveler securely on both maintenance struts.

14. Check shims under ramp cylinder mounting pads. Weld shims together and to subframe using 1" welds.

15. Remove shipping cotter pins from telescopic toe guards (if equipped). See Fig. 11.

16. Permanently mount the laminated dock leveler safety and operating instructions placard on the wall near the dock leveler controls. See Fig. 12. Make sure the customer gets the user's manual and is properly trained.

17. Using the electrical power use the procedure shown on page 13 to lower both maintenance struts.

18. Operate the dock leveler four more times through the complete cycle to check operation.

Fig. 11

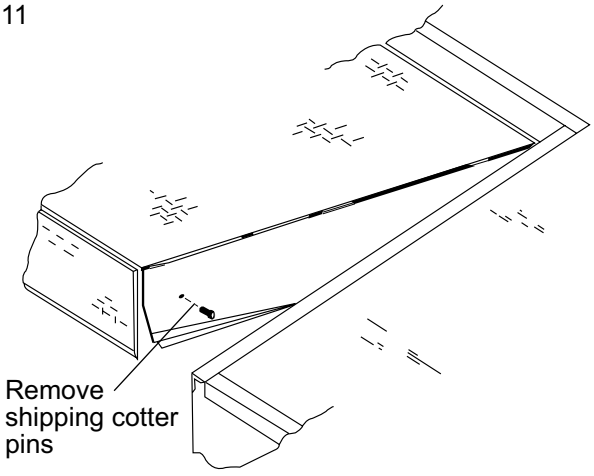
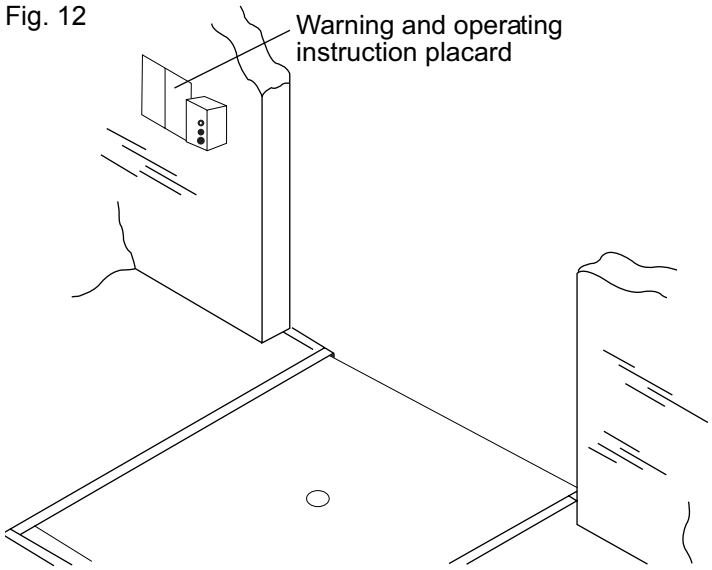


Fig. 12



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⚠DANGER

Before servicing the dock leveler, read and follow the Safety Practices on page 3 and the Operation section of this manual.

DO NOT WORK UNDER THE DOCK LEVELER RAMP OR LIP UNLESS BOTH MAINTENANCE STRUTS ARE SECURELY SUPPORTING THE LEVELER, AND THE LIP MAINTENANCE BAR IS SUPPORTING THE LIP.

MAINTENANCE STRUTS AND LIP MAINTENANCE BAR

1. To raise both maintenance struts and the lip maintenance bar two people are needed:
   a. Push and hold the **RAISE** button on the control panel so leveler is fully raised and lip is extended.

   b. The second person raises the maintenance struts into the locked vertical position while positioning the maintenance struts into the brackets located on the underside of the ramp assembly. (See Fig. 13.)

   c. Pull out hitch pin and clevis pin from top hole of lip maintenance bar bracket and raise lip maintenance bar. (See Fig. 14.)

   d. Reinsert clevis pin through brackets and lip maintenance bar bracket. Then reinsert the hitch pin into the clevis pin.

   e. Release the **RAISE** button and leveler will lower to securely supported position resting on both maintenance struts.

2. To lower both maintenance struts from its locked upright position two people are needed:
   a. Push and hold the **RAISE** button on the control panel.

   b. Pull out hitch pin and clevis pin from top hole on lip maintenance bar bracket and lower lip maintenance bar.

   c. Reinsert clevis pin through brackets and then put hitch pin in clevis pin to store.

   d. Lift up and then push back to lower both maintenance struts.

   e. Release the **RAISE** button.

Fig. 13

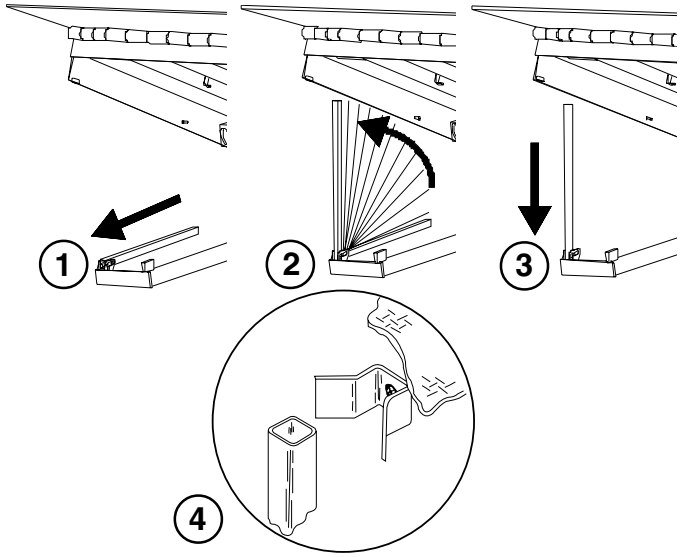
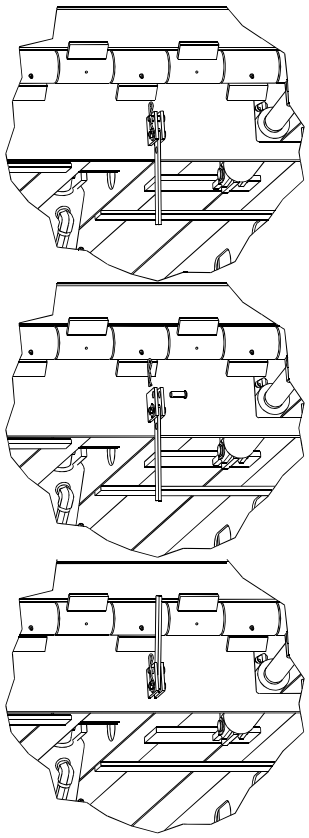


Fig. 14



⚠DANGER

It is important to always engage the lip maintenance bar mechanism when ever working under the leveler with the lip extended. Any upward force on the lip could release the lip latch bar allowing the lip to fall.

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COMPONENTS AND SPECIFICATIONS
(Dock Leveler)

The main components of the leveler are shown below. See the Parts List for specific part numbers.

Fig. 15

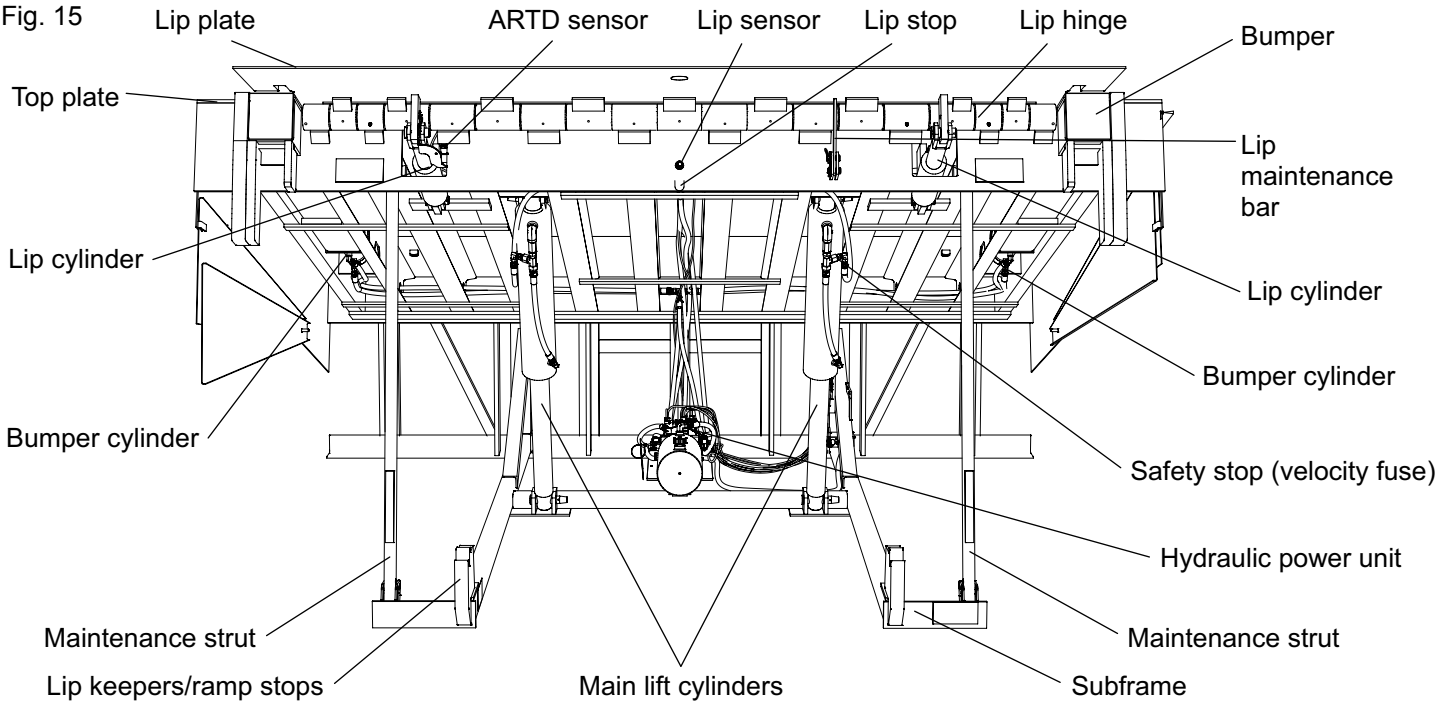
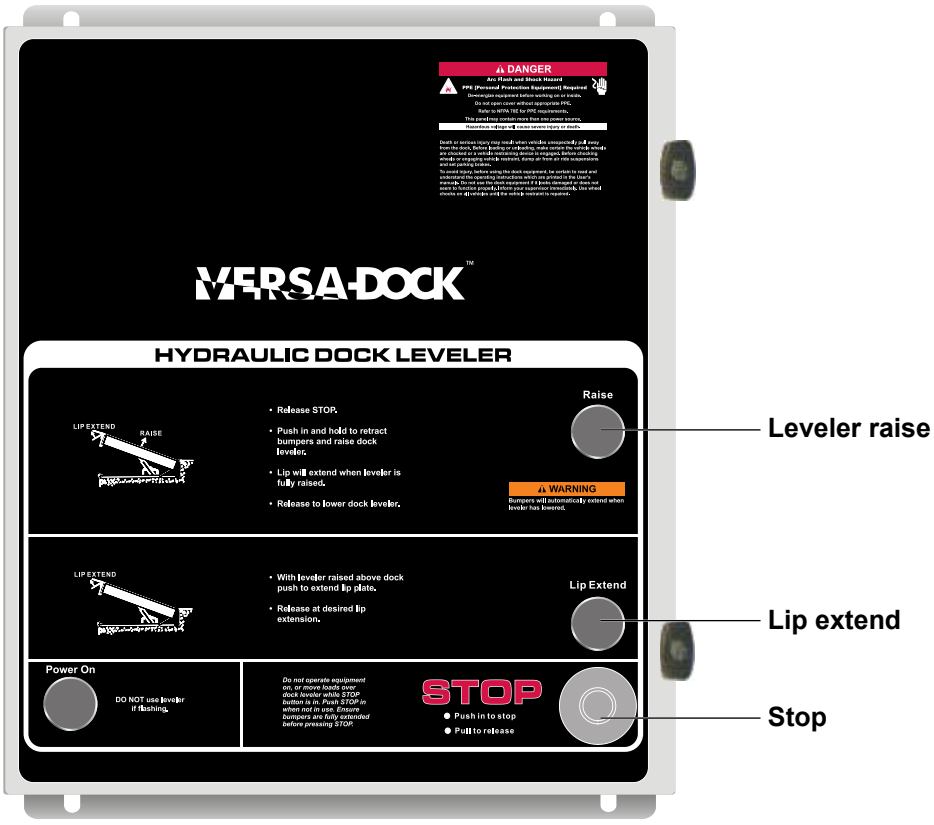


Fig. 16

Control Panel



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COMPONENTS AND SPECIFICATIONS

Control Panel - NEMA 12, automatic motor starter, thermal overload, 2 amp resettable control circuit breaker. U.L. approved.

Auto Return to Dock Proximity Switch - NEMA IP68, normally open, with LED pilot light.

Motor - NEMA Standard T.E.N.V. / 48YZ frame, 1 h.p., single or three phase.

Pump - Fixed displacement gear pump, 2 gpm, primary relief valve factory set at 1400 psi.

Solenoid coils - 24 VAC, #8 series (1/2" dia.)

I/O Wiring - Quick disconnect Euro. connectors, NEMA 6P, (IP-67)

Reservoir Capacity - 1.3 U.S. gallons, (4.7 liters.) level measured by dipstick.

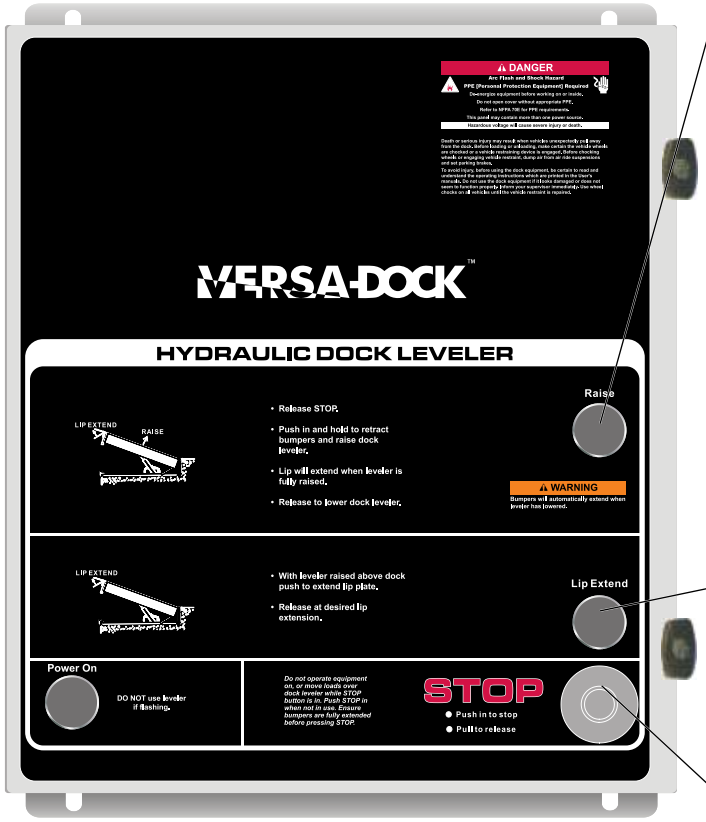
NOTE: Oil level should measure 4-1/2" ± 1/4" from the top of the fill hole with the leveler in maintenance position and the lip extended.

Hydraulic Fluid - Acceptable Hydraulic oils:
Shell Tellus T 15
Mobil Aero HFA (49011)
Exxon Univis Grade J13
Texaco Aircraft Oil #1554
U.S. Oil Co., Inc #ZFI-5606 (Low Temp.)

HYDRAULIC SYSTEM OPERATION
(Leveler And Bumpers)

The following describes the operation of the hydraulic system when the controls are activated.

Fig. 17



RAISE
- Pump starts, needle valve shifts.
- Bumpers Retract.
- Main lift cylinder extends and lip cylinder retracts.
- Pilot check valve opens.

When Leveler Fully Raised
- Pressure Increases.
- Sequence valve shifts.
- Lip cylinder extends.

RAISE Button Released
- Sequence valve and needle valve return.
- Leveler floats down forcing fluid into reservoir.
- Lowering speed controlled by flow control in needle valve.
- When ramp is supported by vehicle floor, bumpers extend.

LIP EXTEND
- With leveler above dock height, pump starts as above.
- Solenoid valve (SV5) is de-energized, locking maincylinder in partial raised position.
- Pressure increases, sequence valve shifts and lip extends.

STOP Button Pressed
- Solenoid valve (SV5) is de-energized, locking main cylinder and lip cylinder.
- Power cut off from motor circuit.

Communications light
- Light illuminates when power is applied to motor circuit.
- Light will flash when bumpers fail to engage.

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OPERATING INSTRUCTIONS — LEVELER

⚠WARNING

Before operating the dock leveler, read and follow the Safety Practices on page 3.

Use by untrained people can result in death or serious injury. Read and follow complete operating instructions.

DO NOT USE DOCK LEVELER IF IT LOOKS BROKEN, OR DOES NOT SEEM TO WORK RIGHT. Tell your supervisor it needs repair right away.

Always be certain that the vehicle is properly restrained, before loading or unloading. VISUALLY INSPECT vehicle restraint to make sure vehicle does not pull away unexpectedly. Failure to do so could result in death or serious injury.

Never drive on dock leveler with STOP button pressed in.

RAISING LEVELER

1. Press the **RAISE** button on control panel to retract bumpers and raise leveler.

2. When the leveler is fully raised, the lip will automatically extend. To extend the lip earlier, press the **LIP EXTEND** button.

3. When leveler is supported by vehicle floor, bumpers will extend.

NOTICE

If amber pilot light is flashing, the bumpers have failed to extend properly. Reset by pressing RAISE or cycling STOP button.

4. When lip is fully extended release the button. The leveler will slowly float down to the vehicle bed, and the bumpers will extend when the lip is supported by the vehicle. Press the **STOP** button to stop leveler in any position. Never drive on the leveler with **STOP** button pressed. Leveler must be free to float with vehicle when driven on.

NOTICE

If an obstruction prevents the lip from extending properly, press the RAISE button to raise and retract the lip. Perform below dock end loading as described on page 18.

⚠WARNING

Always secure the vehicle with a vehicle restraint or wheel chocks before operating the dock leveler. Do not operate the dock leveler with anyone standing on or in front of it.

Always keep hands and feet clear of all moving parts.

Always restore the dock leveler to its safe dock level storage position after servicing the vehicle.

Keep away from the dock leveler lip and bumpers when the raise button is pressed or released. The lip and dock leveler are free to move and the bumpers move automatically when pressure is applied and/or released.

Fig. 18

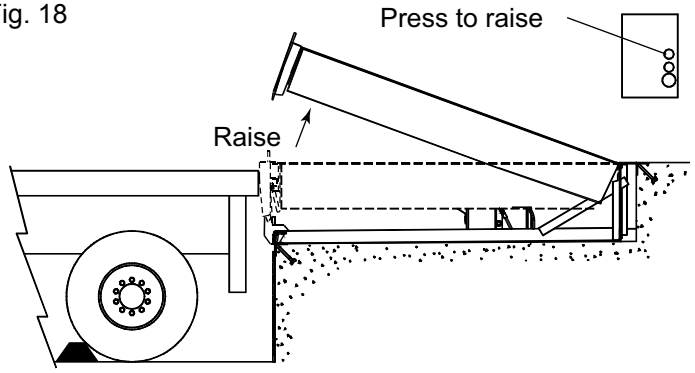


Fig. 19

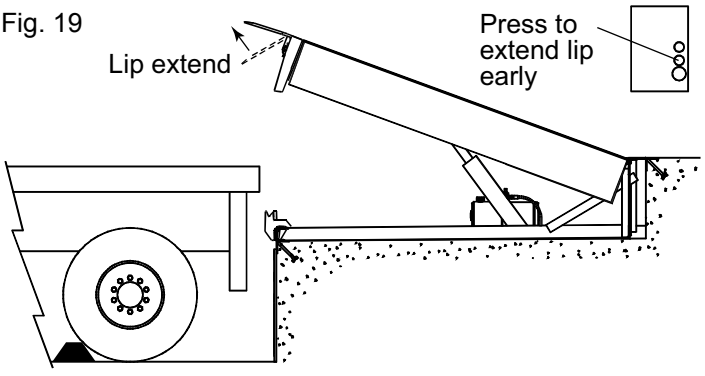
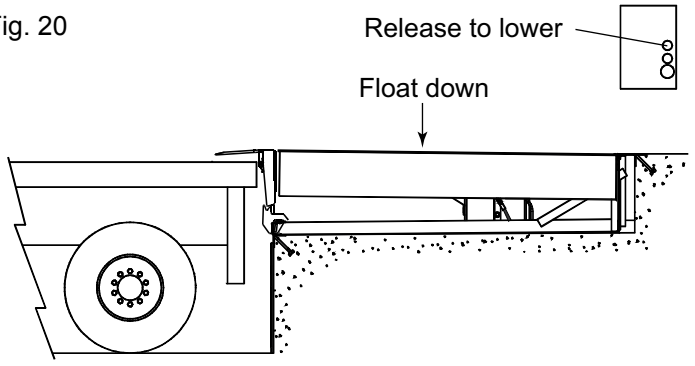


Fig. 20



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STORING LEVELER

1. To return the leveler to the stored position, press the **RAISE** button. The bumpers will retract and the leveler will raise. As the leveler raises the lip will retract. When the lip is fully retracted, release the **RAISE** button. The leveler will float down to the stored position. When the leveler is stored the bumpers will extend.

⚠WARNING

If the dock leveler is interlocked to a vehicle restraint then the bumpers will extend again when the vehicle restraint is released.

BELOW DOCK END LOADING

1. Press the **RAISE** button until leveler is about 6" above dock. The bumpers will retract before the leveler starts to raise. Press **LIP EXTEND** button until the lip has cleared the front of the keepers and release the button. Leveler will float down for end loading.

AUTO RETURN TO DOCK (A.R.T.D.) OPERATIONS

The A.R.T.D. automatically resets the leveler whenever a vehicle pulls away from the loading dock with the lip resting on the vehicle. This is how it works:

1. If the vehicle pulls away, the leveler will float down to the lowest position and the lip will fall. The bumpers will retract. Then the leveler will automatically raise, retract the lip, then float down to the stored position. The bumpers will then extend.

Fig. 21

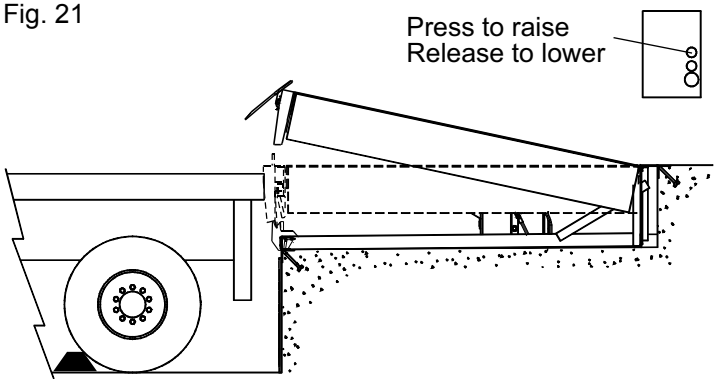


Fig. 22

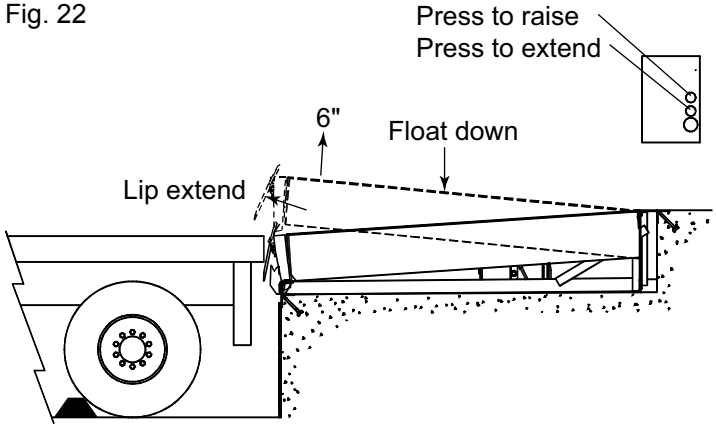
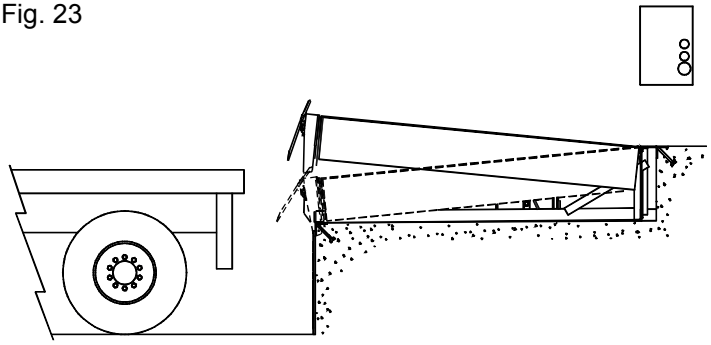


Fig. 23



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PLANNED MAINTENANCE

To ensure the continued reliable operation of your dock leveler, perform the following planned maintenance procedures.

⚠WARNING

Before servicing the dock leveler, read and follow the Safety Practices on page 3 and the Operating Instruction section in this manual.

Place barricades on the dock floor around the dock leveler pit and in the driveway in front of the pit while installing, maintaining or repairing the dock leveler.

⚠DANGER

Be certain, before climbing into the pit or doing any maintenance or repair under the leveler, that:
1) Both maintenance struts are securely supporting the ramp in the event it could fall or be accidently lowered.
2) The power is disconnected and properly tagged or locked off.

Failure to do so could result in death, or serious injury.

WEEKLY

1. Clean the upper portion of the lip plate hinge with a wire brush and blow away all dirt and debris. This will ensure proper lip plate operation.

2. Check the full range of operation of the leveler and bumpers to ensure there is no hesitation in the hydraulic system. Any loss of fluid will effect the velocity fuse operation.

3. Inspect the operation of the telescopic toe guards to ensure they are not distorted or binding when the leveler is operating.

4. Clean away any debris from the rear hinge area of the leveler and between the sides and curb angles to ensure smooth operation.

QUARTERLY

1. Clean out inside of the pit area. If washing out, take care not to spray any electrical parts or hydraulic components.

2. Lubricate the lip hinge tubes with a NLGI #2 Molybdenum Disulfide Grease. See Fig. 24 for locations. Do not over grease. For lip, stop when grease begins to ooze out of the hinge tube ends. For bumpers, place a small layer of grease on the sliding surfaces of each bumper over a 5" x 6" area as located in Fig. 24 while bumpers are fully extended. Wipe off excess grease.

QUARTERLY (continued)

3. Inspect and lubricate all mechanical pivot points on the leveler and bumpers with S.A.E. 30 oil. Cycle the leveler after lubricating. (See Fig. 24.)

4. Inspect the hydraulic cylinders and hoses for any fluid loss and check the reservoir level with the leveler is resting on both maintenance struts. The reservoir should be 1/3 full, add oil as required.

5. Inspect all welds under the leveler for fatigue or failure, particularly the lip plate hinge and under the ramp of the leveler.

6. Inspect all warning labels and placards. Replace as necessary.

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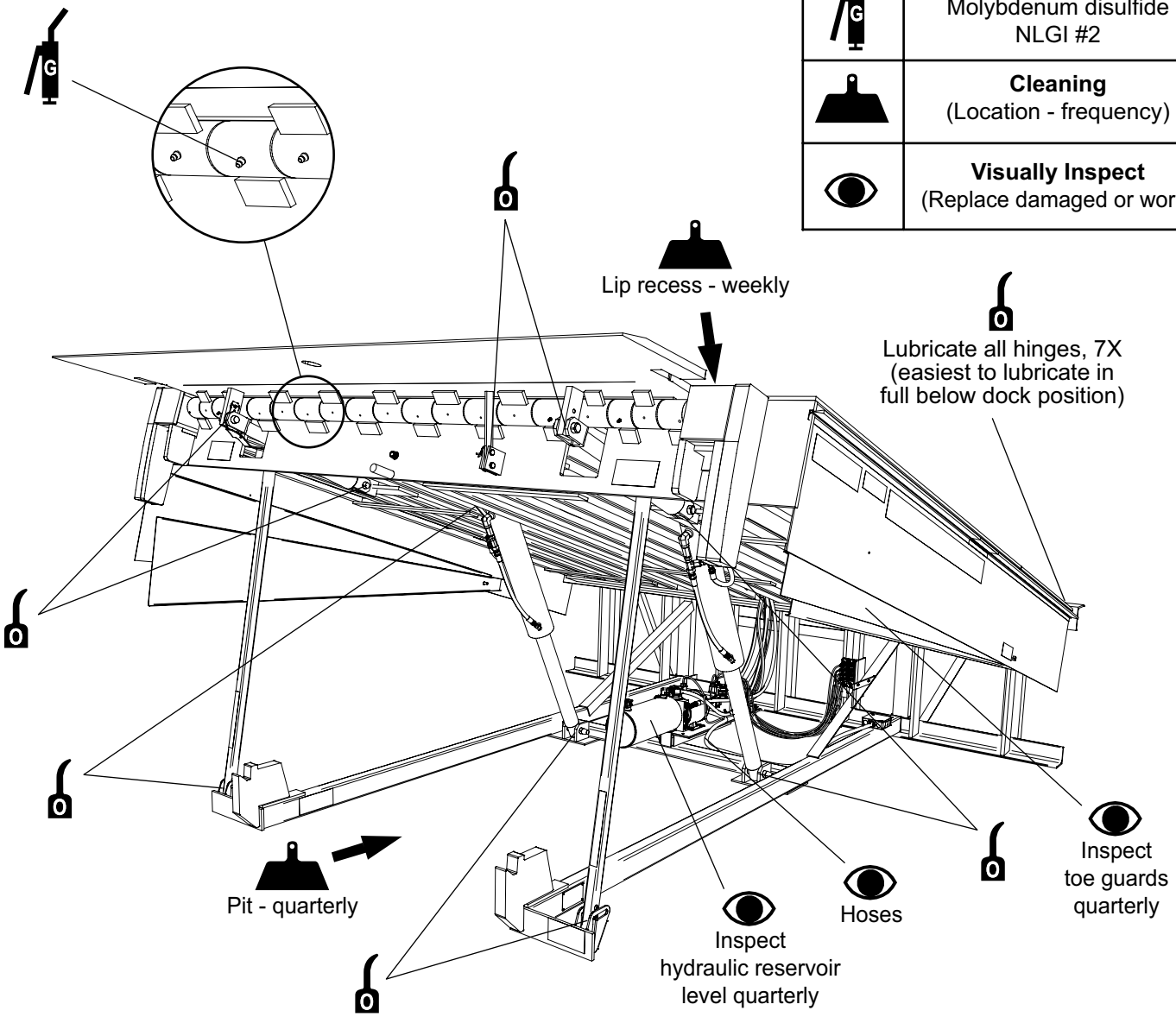
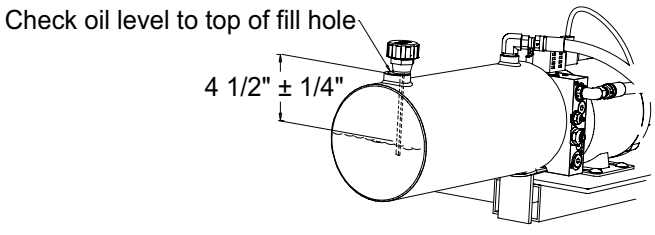
Fig. 24

Legend	
Symbol	**Description**
O	**Lubricate - Oil** Light oil - SAE 30
G	**Lubricate - Grease** Molybdenum disulfide NLGI #2
	Cleaning (Location - frequency)
	Visually Inspect (Replace damaged or worn)





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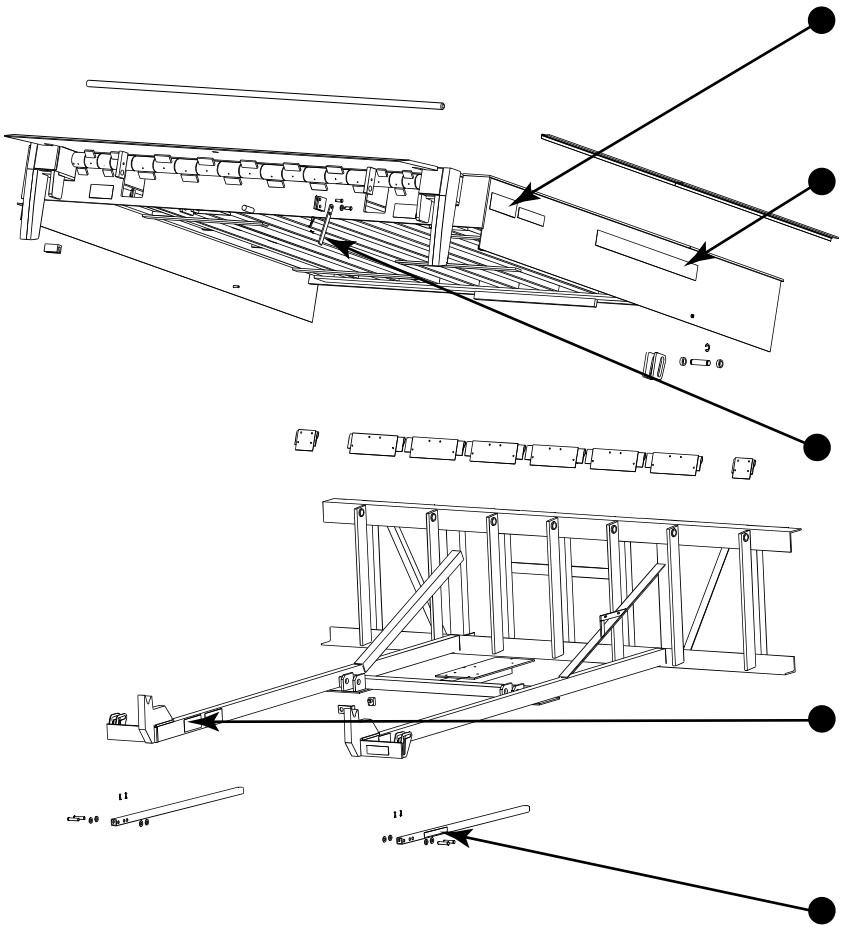
PLANNED MAINTENANCE, continued

Every 90 days (quarterly) inspect all safety labels and tags to ensure they are on the dock leveler and are easily legible. If any are missing or require replacement, please call 1-800-525-2010 or 972-466-0707 for replacements.



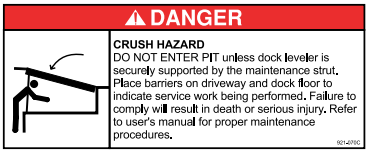
6008485 (x2)

600104B

138-837 (x2)

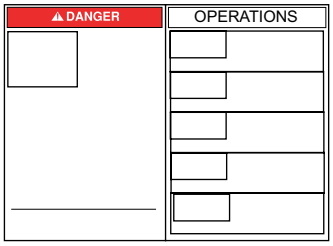
921-075 (x1)

921-070 (x4)



921-074 (x2)

6003122



WARNING AND OPERATION PLACARD
(MOUNTED ON WALL NEAR LEVELER)

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TROUBLESHOOTING GUIDE

⚠WARNING

Before servicing the dock leveler, read and follow the Safety Practices on page 3 and the Operating Instruction section in this manual.

⚠DANGER

Before doing any electrical adjustments or repair to control panel(s), make certain the power is disconnected and properly tagged or locked out. If this is not possible in order to make the adjustment or repair USE EXTREME CAUTION! Do not put fingers or uninsulated tools inside the control panel. Failure to do so will result in death or serious injury.

Be certain, before climbing into the dock leveler pit or doing any maintenance or repair under the dock leveler, that:
1) Both maintenance struts are raised and securely supporting the ramp in case of emergency.
2) The power is disconnected and properly tagged or locked out.

Failure to do so could result in death or serious injury.

PROBLEM	POSSIBLE CAUSE	SOLUTION
1. Leveler does not raise. Motor is silent.	a) No electrical power to control panel.	a) Check that voltage is present at terminal connections to the control panel.
	b) Electrical connections incorrect or broken.	b) Check that wiring matches the wiring diagram.
2. Leveler does not raise; motor starts then stops, motor starter relay chatters.	a) Overload relay, main circuit breaker or leveler control circuit tripping out.	a) Check overload relay setting and current draw.
	b) Voltage drop due to long wiring distance from power source.	b) Check voltage when motor is started. Voltage drop is more often a problem on single phase motors. See conductor specifications in installation instructions.
3. Leveler does not raise. Motor hums.	a) Voltage drop.	a) See previous solution.
	b) Loss of 1 phase (Three phase only).	b) Check for voltage at all three motor connections (T1, T2, T3) in control panel.
4. Bumpers fail to extend.	a) Hydraulic hose(s) leaking.	a) Repair or replace hose(s)
	b) PS1 pressure switch faulty.	b) Repair or replace pressure switch PS1 or wiring.

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TROUBLESHOOTING GUIDE, continued

PROBLEM	POSSIBLE CAUSE	SOLUTION
4. Leveler does not raise. Motor runs.	a) Low fluid level in reservoir.	a) Check fluid level with leveler fully raised. Add fluid if required and check for leaks. See page 15 for correct fluid level.
	b) Solenoid SV5 Malfunction.	b) Check for magnetism at valve coil on SV5, 24 VAC should be present in SV5. Replace if necessary.
	c) Pump not running or pressure insufficient.	c) Remove the hose from main lift cylinder and point free end into reservoir opening. If no oil is pumped, check pump drive shaft coupler or replace pump.
	d) Pump running in reverse (Three phase only).	d) Check motor rotation and reverse electrical connections if necessary.
	e) Primary relief valve setting too low.	e) Set primary relief valve setting to 1400 PSI.
5. Overload relay tripping.	a) Overload relay set too low.	a) Check full load amperage and overload relay setting. Set overload relay dial to current indicated on motor nameplate.
	b) Loss of 1 phase (Three phase only).	b) Check for voltage at all three motor connections (T1, T2, T3) in control panel.
6. Leveler will not lower.	a) Automatic safety stop (velocity fuse) is locked.	a) If load was on the leveler, remove the load and jog the **RAISE** button to unlock the leveler. If no load was on the leveler, adjust the needle valve to reduce drop speed.
7. Leveler floats down too slowly.	a) Needle valve requires adjustment.	a) Adjust needle valve for faster flow. Turn counterclockwise to increase speed. Adjust needle valve so that ramp lowering speed equals ramp raise speed.

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PROBLEM	POSSIBLE CAUSE	SOLUTION
8. Lip plate will not extend, or extends too slowly.	a) Low fluid level in reservoir.	a) Check fluid level with leveler raised. Add fluid if required and check for leaks. (See pg 15 for correct fluid level)
	b) Sequence valve set too high.	b) If lip extends as dock raises, increase sequence valve setting by turning clockwise.
	c) Lip hinge bar binding.	c) Inspect lip area for damage or trapped debris.
	d) Primary relief valve set too low.	d) Set primary relief valve to 1400 PSI.
9. Lip plate extends too soon.	a) Sequence valve set too low.	a) Turn clockwise to increase pressure so that the lip plate does not extend until the deck is fully raised.
10. Lip plate will not stay out/falls as leveler is lowering.	a) Pilot operated check valve / valve not closing.	a) Remove and inspect for foreign matter. Clean as required.
	b) Lip cylinder damaged.	b) Replace lip cylinder.
11. Auto Return To Dock not operating properly.	a) Proximity switch faulty or faulty electrical connection.	a) Check for 24 VDC at ARTD terminals in control panel.
	b) Proximity switch or lip target are not properly adjusted.	b) Check adjustment of proximity switch and lip target arm. Refer to adjustment procedure on pages 35-36.
12. **LIP EXTEND** button is not working. **STOP** button not working.	a) Incomplete circuit to solenoid valve.	a) Check electrical connections to switches and solenoid.
	b) Solenoid valve (SV4) malfunction.	b) Check for magnetism at valve coil. Use a screwdriver or other steel object. Replace valve coil as required.
	c) Solenoid valve (SV4) is incorrect.	c) Confirm SV4 is a NC valve and has the correct part number noted in the auxiliary manifold parts list on page ?.

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TROUBLESHOOTING GUIDE, continued

PROBLEM	POSSIBLE CAUSE	SOLUTION
13. Bumpers do not retract.	a) Incomplete circuit to solenoid valve.	a) Check for 24VAC at SV1, SV2 and SV3 terminals in control panel. 24 VAC should be present at SV1.
	b) Solenoids SV1, SV2 or SV3 malfunction.	b) Check for magnetism at valve coils on SV1, SV2 and SV3. There should be no magnetism at SV2 and SV3. Use a screwdriver or other steel object. Replace coil as needed.
	c) Pressure switch problem.	c) Check continuity of pressure switch PS2 when leveler is raising.
14. Bumpers do not extend.	a) Electrical problem.	a) Check for 24VAC at SV1, SV2 and SV3 terminals in control panel. There should only be 24VAC at SV2 and SV3.
	b) Solenoid valve SV1, SV2, or SV3 malfunction.	b) Check for magnetism at valve coils on SV1, SV2, and SV3. There should be magnetism for SV2 and SV3. Use a screw driver or other steel object. Replace coil as required.
	c) Pressure switch problem.	c) Check continuity of pressure switch PS2 when leveler is raising.
15. Pump does not shut off after bumpers extend.	a) PS1 pressure switch problem.	a) Check max. pressure setting with gauge on main cylinder circuit. Adjust pressure setting if necessary as described on page 25. Check continuity of pressure switch, PS1. May have a faulty connection or wire. Make sure all plugs are properly routed and seated.
	b) PS1 pressure switch faulty.	b) Replace PS1 pressure switch.

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SECONDARY MANIFOLD ADJUSTMENT

⚠WARNING

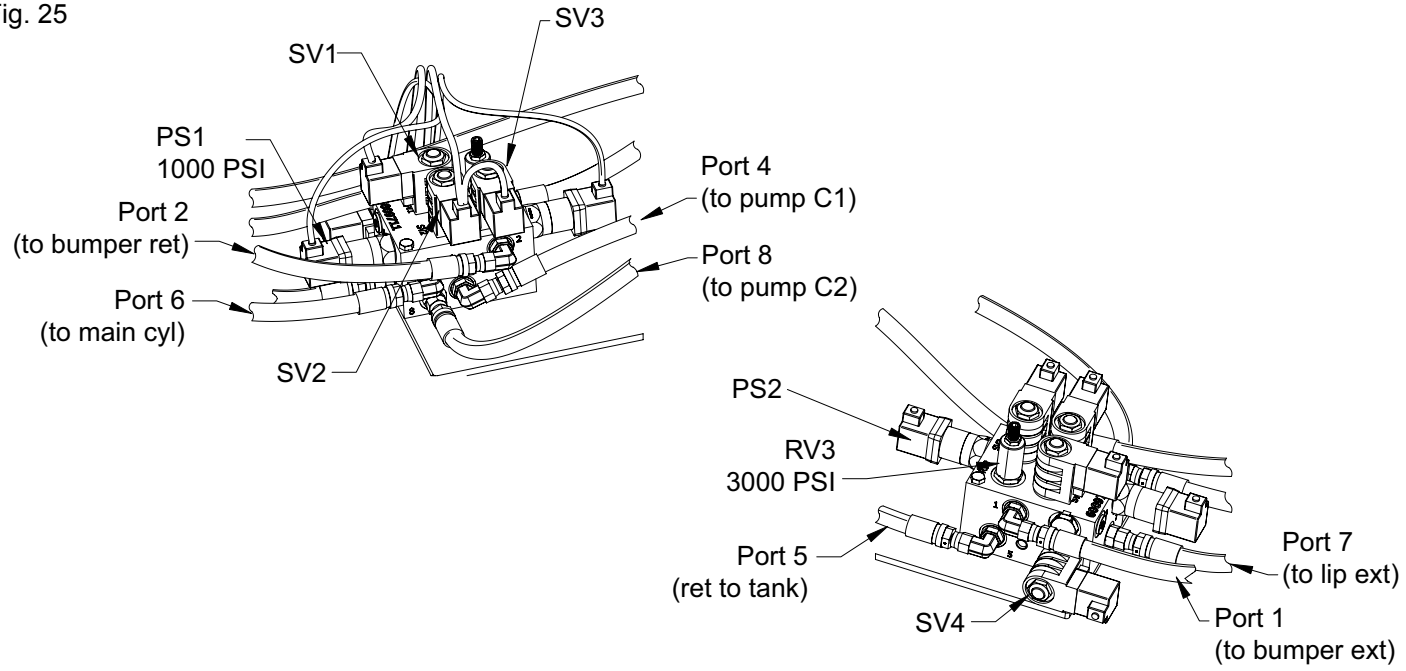
Before servicing the dock leveler, read and follow the Safety Practices on page 3. Failure to do so could result in death or serious injury.

⚠DANGER

Disconnect power and properly tag or lock out to prevent accidental operation while making adjustments.

Do not work under the dock leveler ramp or lip unless both maintenance struts are securely supporting the leveler, and the lip maintenance bar is supporting the lip.

Fig. 25



Description	Purpose	Adjustment
PS2 Pressure Switch	Controls when bumpers will extend by checking for low pressure in system.	Pressure switch will be set at 100 PSI at factory.
Solenoid Valve (SV1)	Keeps bumpers from extending while deck and/or lip are in motion.	No adjustment is required.
Solenoid Valve (SV2)	Directs the flow between the main cylinders and bumpers extending.	No adjustment is required.
PS1 Pressure Switch	Tells the motor to shut off once the bumpers are extended.	Pressure switch will be set at 1000 PSI at factory.
Solenoid Valve (SV3)	Allows bumpers to extend once deck and lip have stopped moving.	No adjustment is required.
Relief Valve (RV3)	Controls maximum pressure in the system when bumpers come in contact with vehicle.	No adjustment is required. Relief valve set at 3000 PSI at factory.

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HYDRAULIC POWER UNIT ADJUSTMENT

⚠WARNING

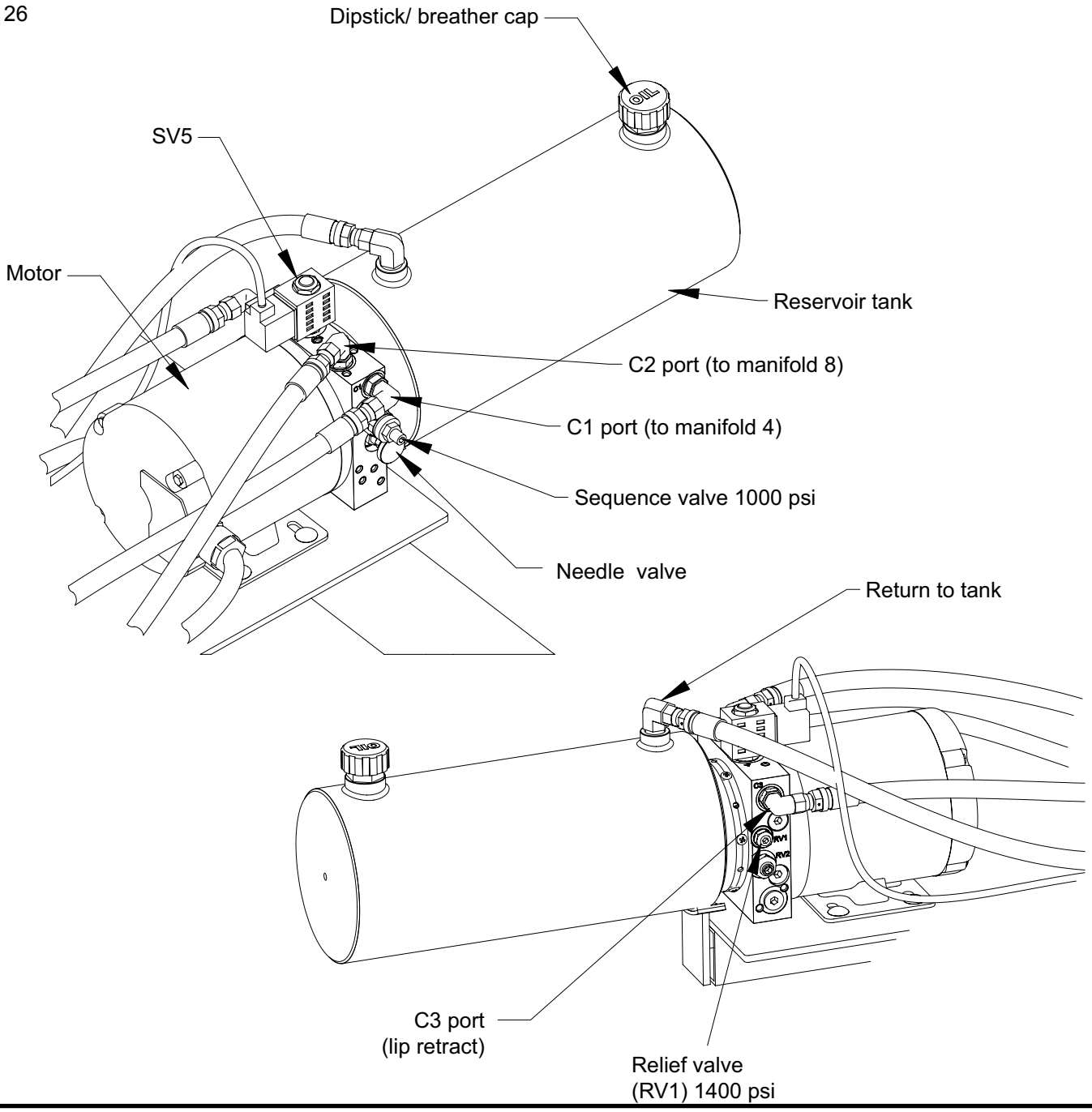
Before servicing the dock leveler, read and follow the Safety Practices on page 3. Failure to do so could result in death or serious injury.

⚠DANGER

Disconnect power and properly tag or lock out to prevent accidental operation while making adjustments.

Do not work under the dock leveler ramp or lip unless both maintenance struts are securely supporting the leveler, and the lip maintenance bar is supporting the lip.

Fig. 26



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HYDRAULIC POWER UNIT ADJUSTMENT, continued

⚠WARNING

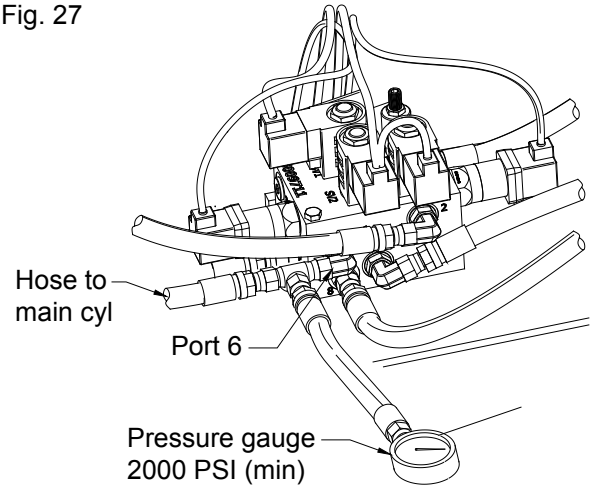
Before servicing the dock leveler, read and follow the Safety Practices on page 3. Failure to do so could result in death or serious injury.

⚠DANGER

Disconnect power and properly tag or lock out to prevent accidental operation while making adjustments.

Do not work under the dock leveler ramp or lip unless both maintenance struts are securely supporting the leveler, and the lip maintenance bar is supporting the lip.

Fig. 27



Versa III -test gauge test locations
a. Main cyl.-------- port 6 or input- main cyl (std test location)
b. Lip cyl ---------- port 7
c. Bumpers ------ port 3

Description	Purpose	Adjustment
Primary Relief Valve (RV1)	Controls maximum pressure in the hydraulic system and protects the other components from excessive force.	Loosen jam nut. Turn screw clockwise to increase relief pressure. Relief pressure will be factory set at 1400 PSI and should not require adjustment. **Requires use of hydraulic pressure gage.**
Flow Control and Needle valve	Controls the lowering speed of the ramp and directs fluid to the main cylinders when the pump is running.	Loosen jam nut. Turn the screw clockwise to decrease drop speed. Adjust lowering speed to match leveler raise speed.
Sequence Valve	Controls lip plate retraction and extension.	Loosen jam nut. If the lip extends before the deck is fully raised, the valve should be turned clockwise. Tightening the valve too far will cause very slow lip extension, or no extension at all.
Solenoid Valve (SV5)	Stops the lowering of the ramp when either the **LIP EXTEND** or **EMERGENCY STOP** button is pushed.	No adjustment is required.
Secondary Relief Valve (RV2)	Controls the force and speed of lip retraction when the power unit is running. (Does not effect speed of lip closing when power unit is not running.)	Loosen jam nut. If the lip is closing too forcefully, turn the adjusting screw clockwise.

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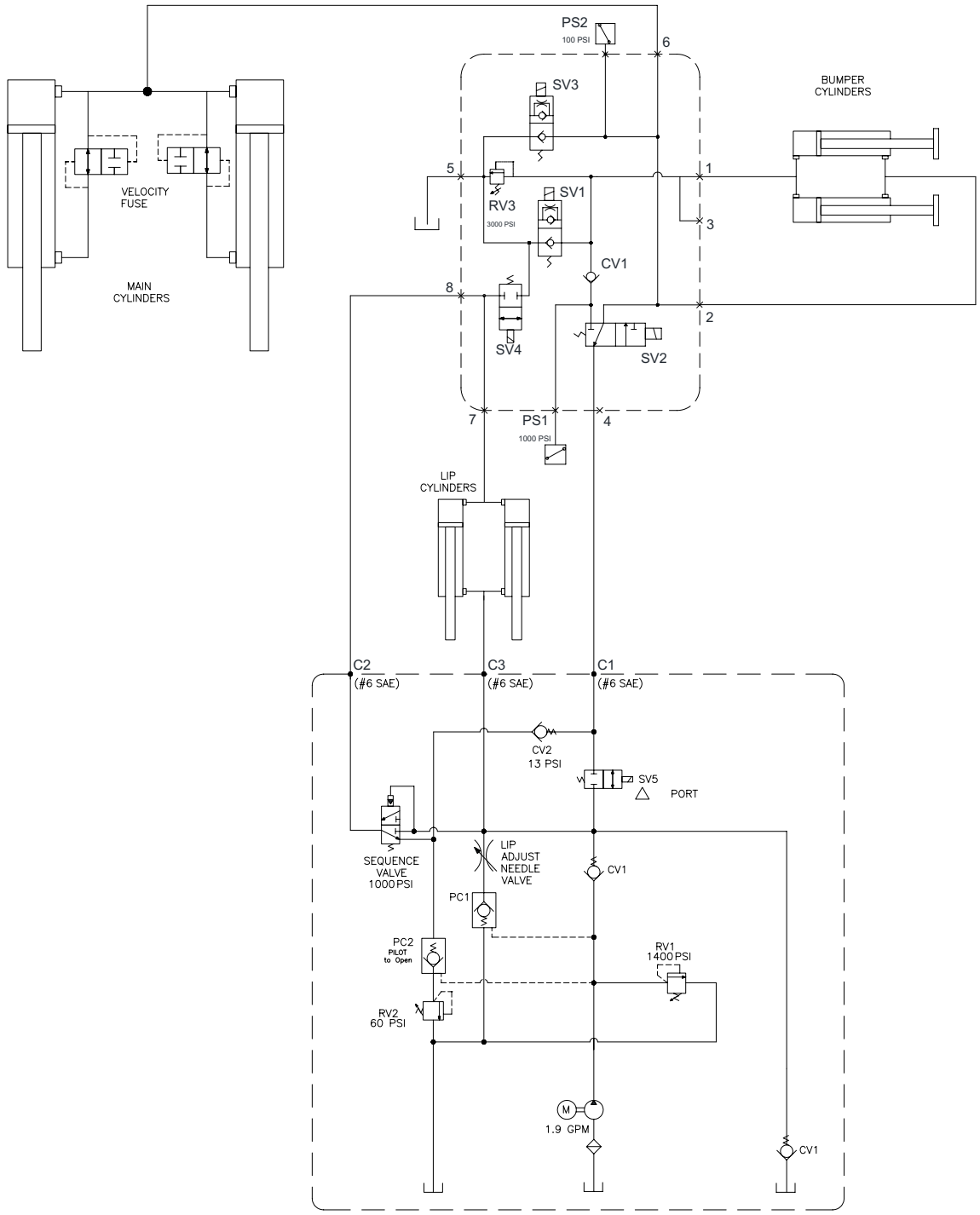
HYDRAULIC SCHEMATIC

Fig. 28



VERSA III HYDRAULIC SCHEMATIC
HIGH CAPACITY DUAL CYLINDERS APPLICATION
3 BUTTON CONTROL
w/ 1 Solenoid Valve in Delta port & 4 Valve Auxiliary Manifold

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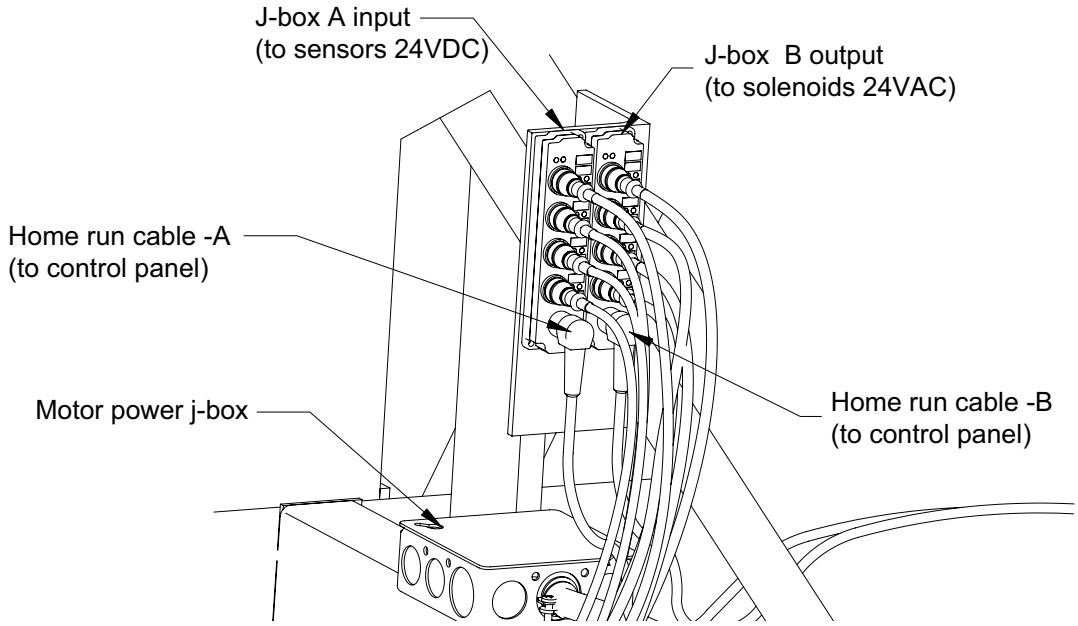
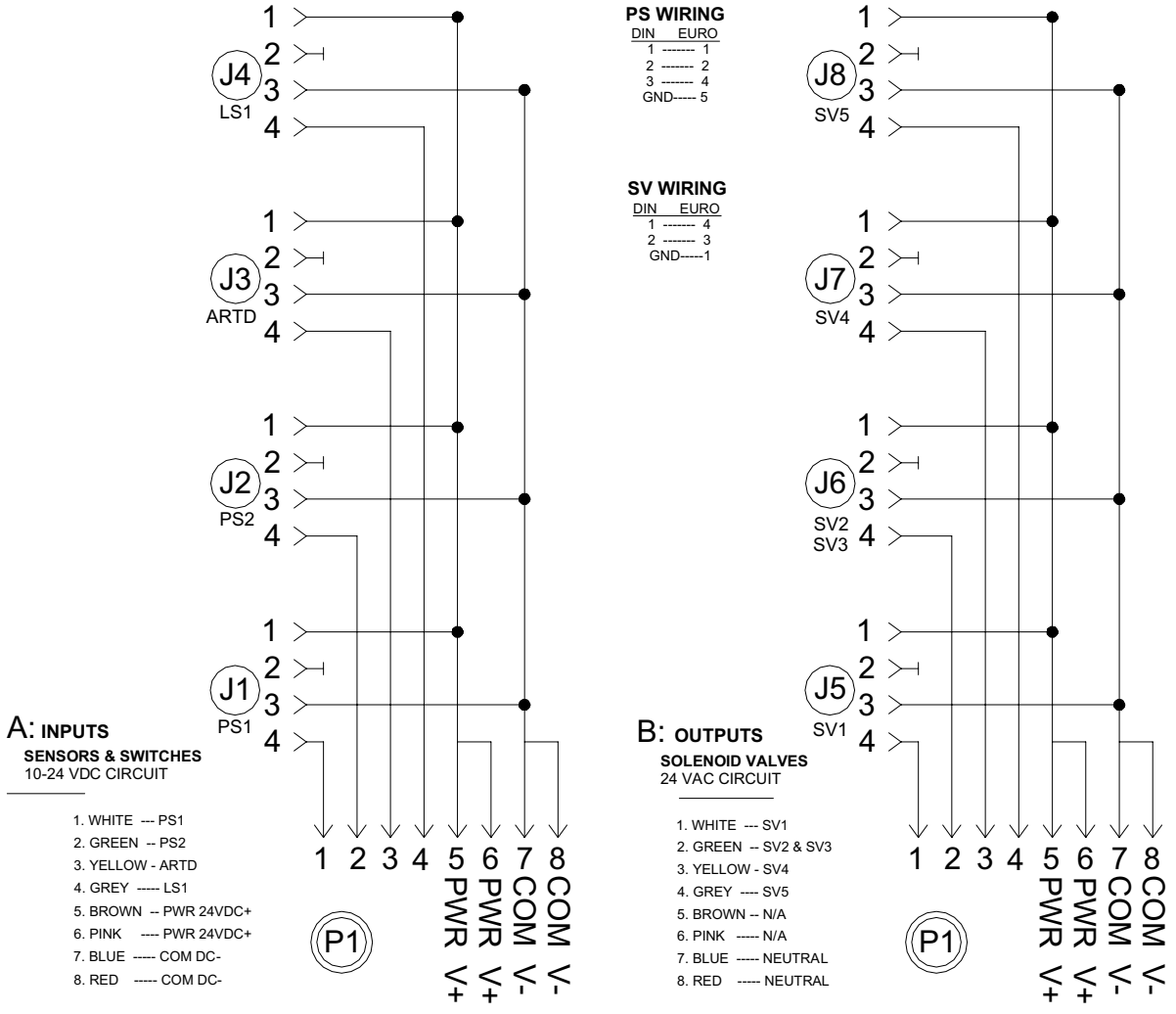
Fig. 29





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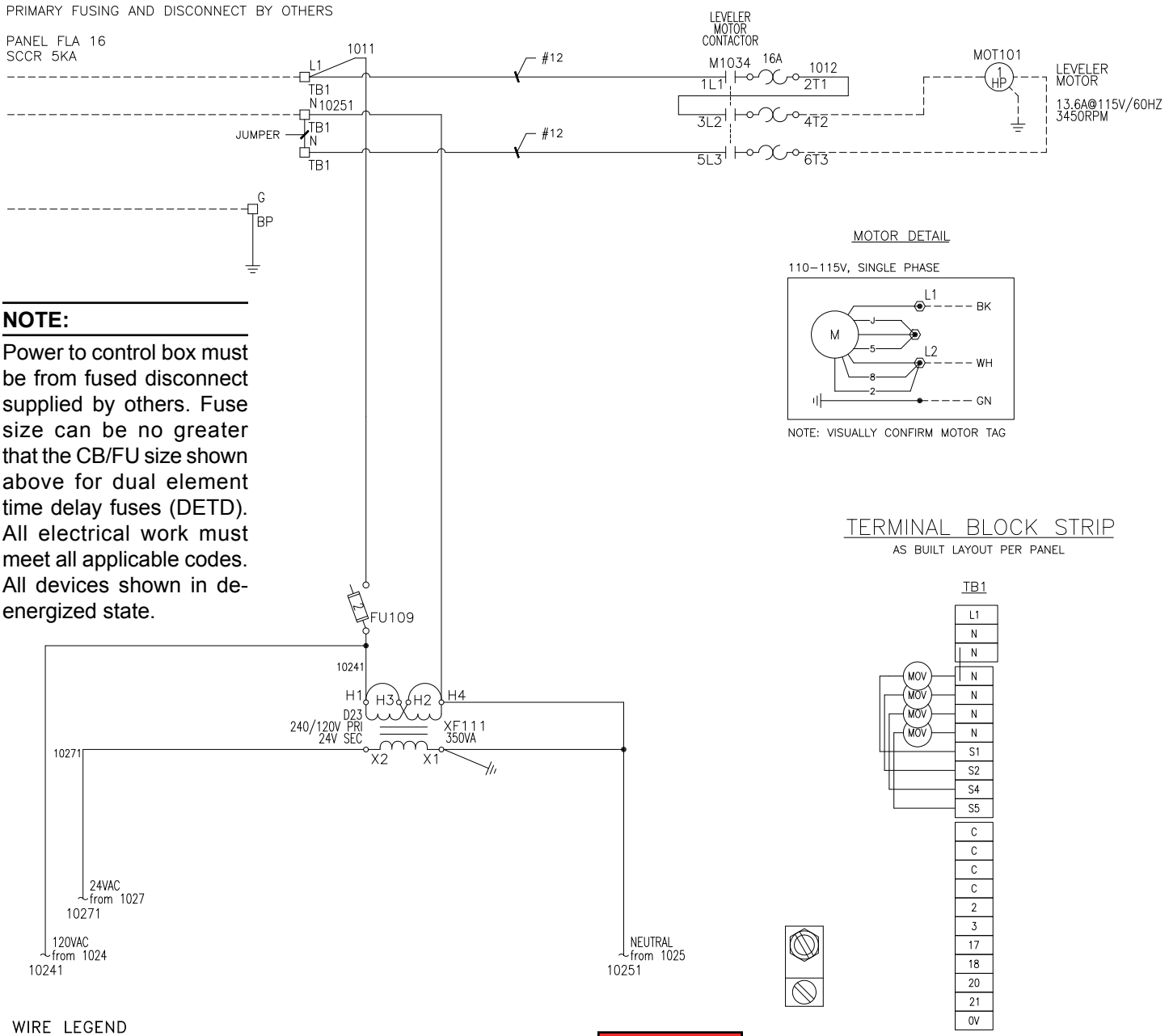
ELECTRICAL SCHEMATIC — 120V/1PH/60HZ

Fig. 30



NOTE:

Power to control box must be from fused disconnect supplied by others. Fuse size can be no greater that the CB/FU size shown above for dual element time delay fuses (DETD). All electrical work must meet all applicable codes. All devices shown in de-energized state.

WIRE LEGEND

———— PANEL WIRING
– – – – – – FIELD WIRING (BY OTHERS)
..... PC BOARD TRACES

NOTE:
TERMINALS WILL ACCEPT STRANDED WIRE ONLY

WIRE COLOR/GAUGE (NFPA)
(unless otherwise specified)

208–600VAC: #14, BLK
120VAC: #16, RED
24VAC: #16, RED/BLK
NEUTRAL: #16, WHT
GROUND: GRN
24VDC: #18, BLU
24V COM (0VDC): #18, BLU/WHT
12VAC/VDC, #18, VIO
12V COM: #18, VIO/WHT
DRY (UNPOWERED): #18, YLW

⚠DANGER

Before doing any electrical work, make certain the power is disconnected and properly tagged or locked off. All electrical work must be done by a qualified technician and meet all applicable codes. If it is necessary to make troubleshooting checks inside the control box with the power on, USE EXTREME CAUTION. Do not place your fingers or uninsulated tools inside the control box. Touching wires or other parts inside the control box could result in electrical shock, death or serious injury.

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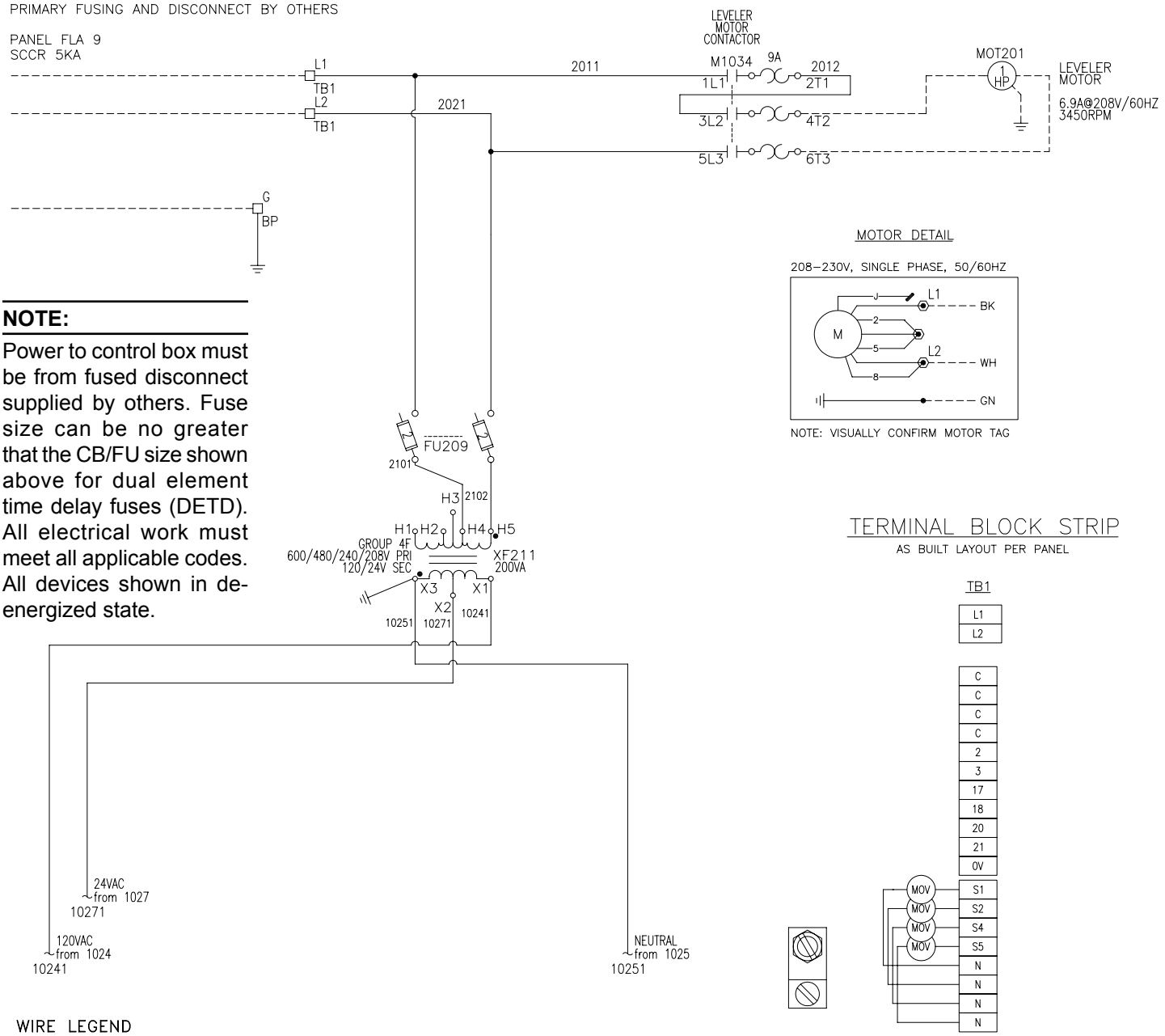
ELECTRICAL SCHEMATIC — 208V/1PH/60HZ

Fig. 31



NOTE:

Power to control box must be from fused disconnect supplied by others. Fuse size can be no greater that the CB/FU size shown above for dual element time delay fuses (DETD). All electrical work must meet all applicable codes. All devices shown in de-energized state.

WIRE LEGEND

——— PANEL WIRING
- - - - - - FIELD WIRING (BY OTHERS)
····· PC BOARD TRACES

NOTE:
TERMINALS WILL ACCEPT STRANDED WIRE ONLY

WIRE COLOR/GAUGE (NFPA)
(unless otherwise specified)

208–600VAC: #14, BLK
120VAC: #16, RED
24VAC: #16, RED/BLK
NEUTRAL: #16, WHT
GROUND: GRN
24VDC: #18, BLU
24V COM (0VDC): #18, BLU/WHT
12VAC/VDC, #18, VIO
12V COM: #18, VIO/WHT
DRY (UNPOWERED): #18, YLW

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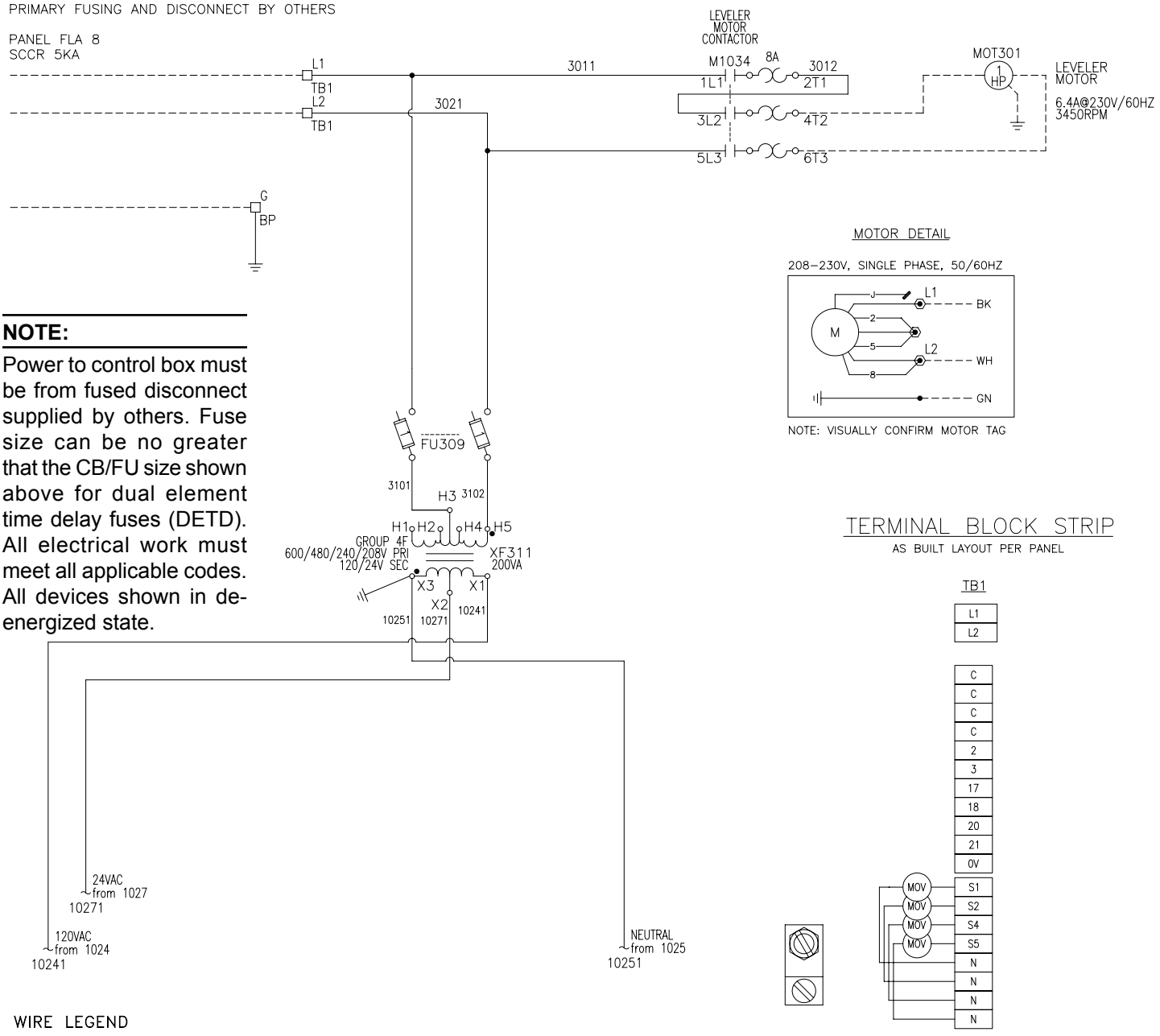
ELECTRICAL SCHEMATIC — 220-240V/1PH/60HZ

Fig. 32



NOTE:

Power to control box must be from fused disconnect supplied by others. Fuse size can be no greater that the CB/FU size shown above for dual element time delay fuses (DETD). All electrical work must meet all applicable codes. All devices shown in de-energized state.

WIRE LEGEND

——— PANEL WIRING
- - - - - - FIELD WIRING (BY OTHERS)
····· PC BOARD TRACES

NOTE:
TERMINALS WILL ACCEPT STRANDED WIRE ONLY

WIRE COLOR/GAUGE (NFPA)
(unless otherwise specified)

208–600VAC: #14, BLK
120VAC: #16, RED
24VAC: #16, RED/BLK
NEUTRAL: #16, WHT
GROUND: GRN
24VDC: #18, BLU
24V COM (OVDC): #18, BLU/WHT
12VAC/VDC, #18, VIO
12V COM: #18, VIO/WHT
DRY (UNPOWERED): #18, YLW

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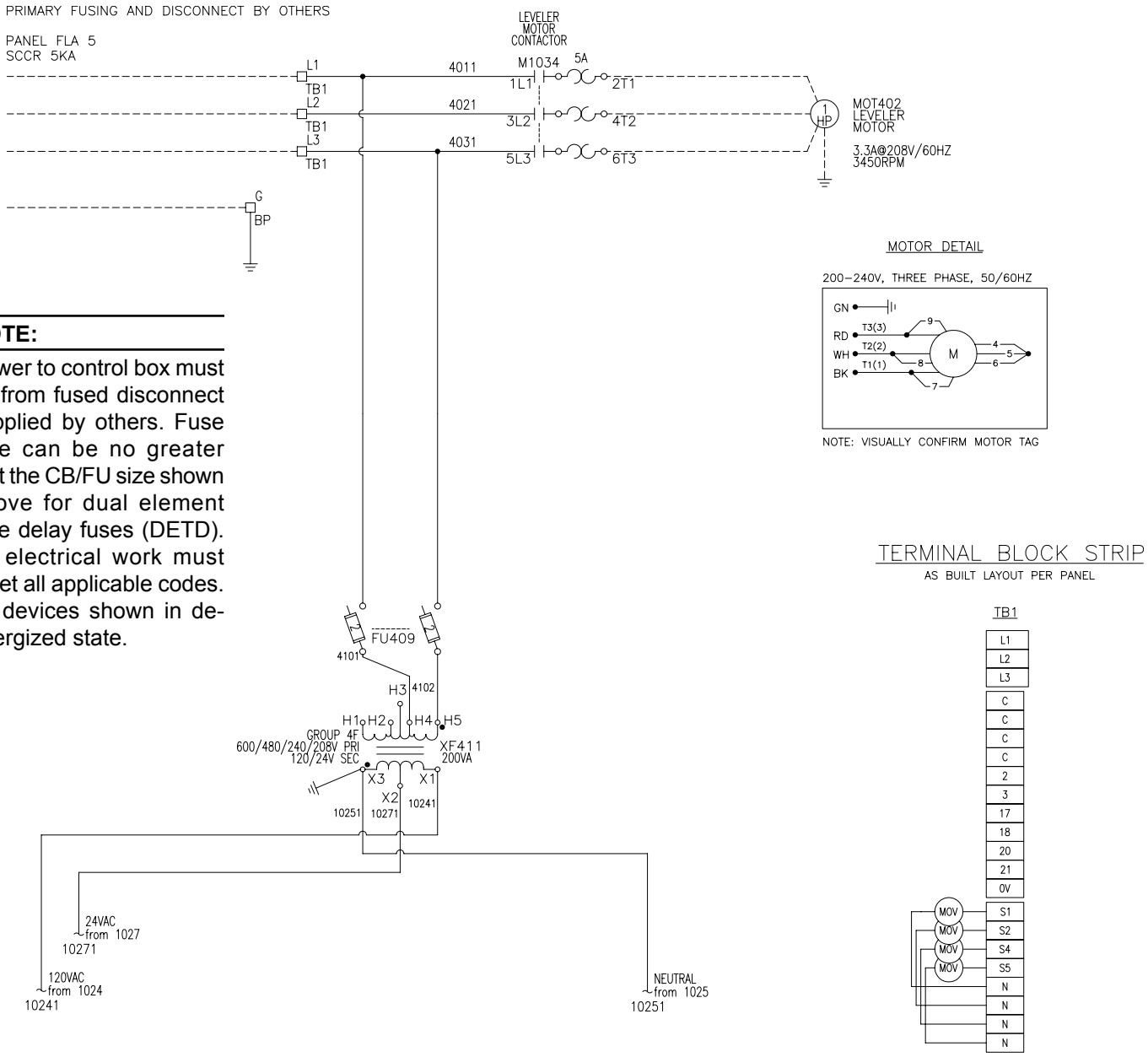
ELECTRICAL SCHEMATIC — 208V/3PH/60HZ

Fig. 33



NOTE:

Power to control box must be from fused disconnect supplied by others. Fuse size can be no greater that the CB/FU size shown above for dual element time delay fuses (DETD). All electrical work must meet all applicable codes. All devices shown in de-energized state.

WIRE LEGEND

———— PANEL WIRING
– – – – – – FIELD WIRING (BY OTHERS)
····· PC BOARD TRACES

NOTE:
TERMINALS WILL ACCEPT STRANDED WIRE ONLY

WIRE COLOR/GAUGE (NFPA)
(unless otherwise specified)

208–600VAC: #14, BLK
120VAC: #16, RED
24VAC: #16, RED/BLK
NEUTRAL: #16, WHT
GROUND: GRN
24VDC: #18, BLU
24V COM (0VDC): #18, BLU/WHT
12VAC/VDC, #18, VIO
12V COM: #18, VIO/WHT
DRY (UNPOWERED): #18, YLW

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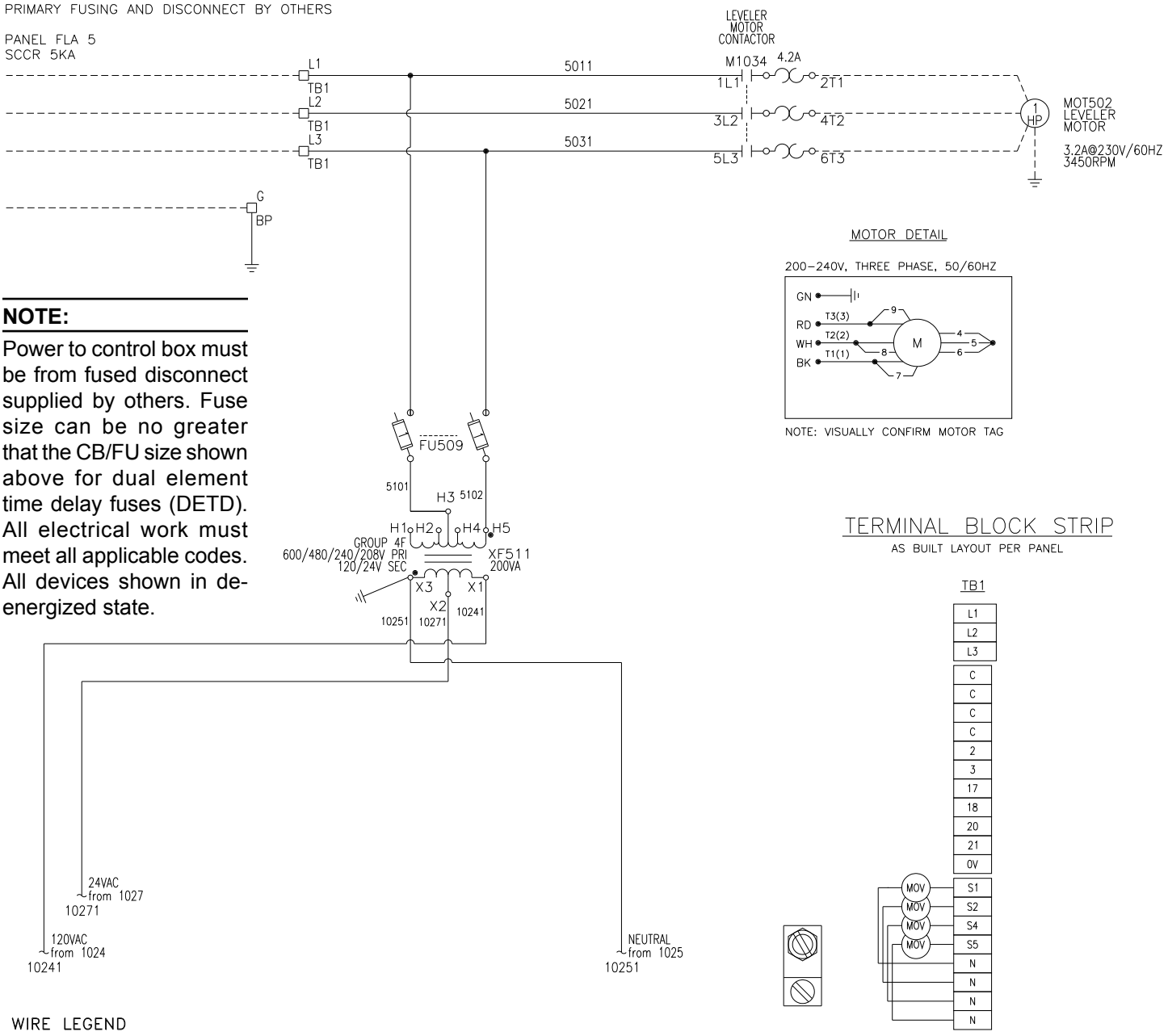
ELECTRICAL SCHEMATIC — 230-240V/3PH/60HZ

Fig. 34



NOTE:

Power to control box must be from fused disconnect supplied by others. Fuse size can be no greater that the CB/FU size shown above for dual element time delay fuses (DETD). All electrical work must meet all applicable codes. All devices shown in de-energized state.

WIRE LEGEND

——— PANEL WIRING
- - - - - - FIELD WIRING (BY OTHERS)
····· PC BOARD TRACES

NOTE:
TERMINALS WILL ACCEPT STRANDED WIRE ONLY

WIRE COLOR/GAUGE (NFPA)
(unless otherwise specified)

208-600VAC: #14, BLK
120VAC: #16, RED
24VAC: #16, RED/BLK
NEUTRAL: #16, WHT
GROUND: GRN
24VDC: #18, BLU
24V COM (0VDC): #18, BLU/WHT
12VAC/VDC, #18, VIO
12V COM: #18, VIO/WHT
DRY (UNPOWERED): #18, YLW

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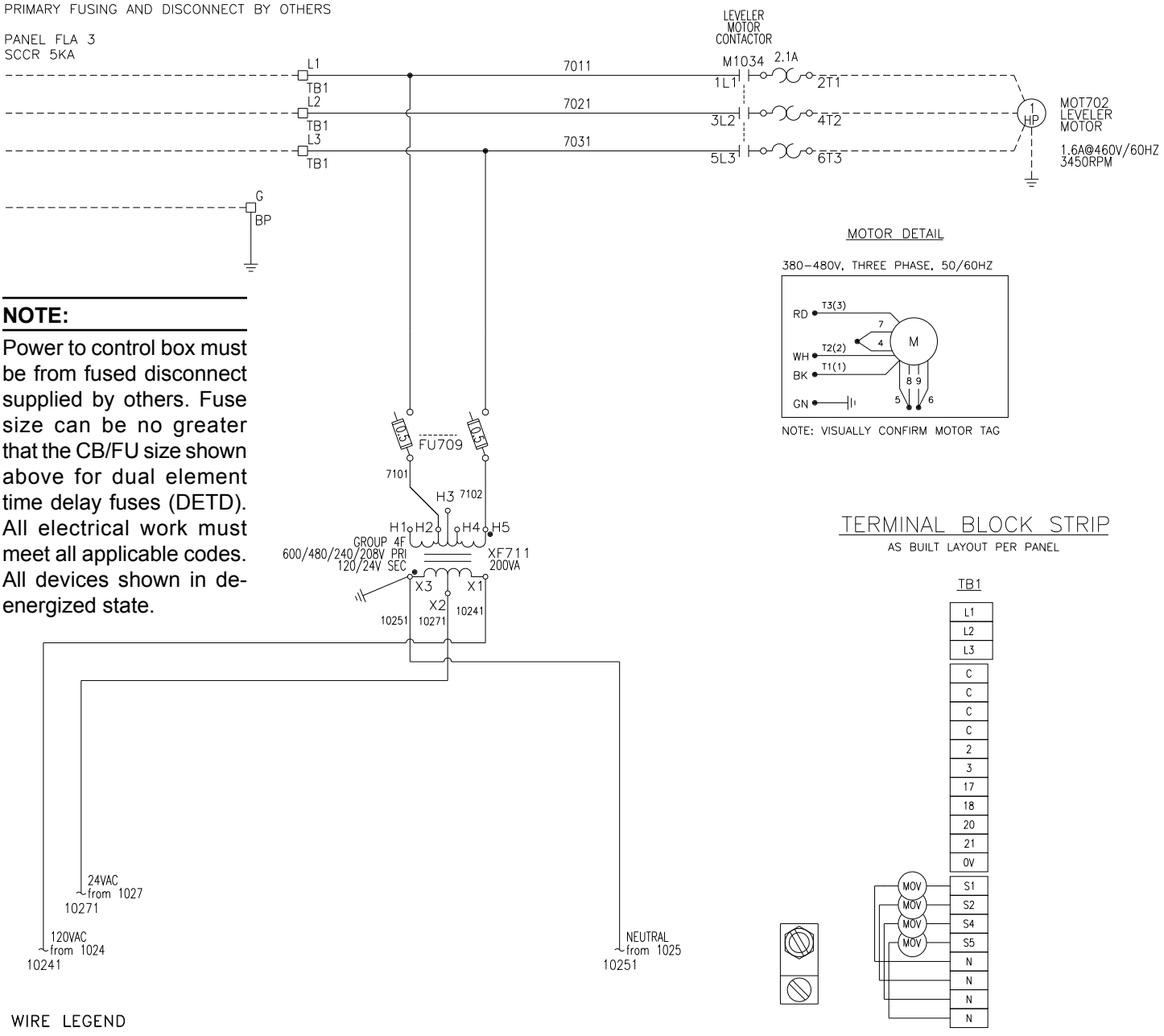
ELECTRICAL SCHEMATIC — 460-480V/3PH/60HZ

Fig. 35



NOTE:

Power to control box must be from fused disconnect supplied by others. Fuse size can be no greater that the CB/FU size shown above for dual element time delay fuses (DETD). All electrical work must meet all applicable codes. All devices shown in de-energized state.

WIRE LEGEND

——— PANEL WIRING
- - - - - - FIELD WIRING (BY OTHERS)
····· PC BOARD TRACES

NOTE:
TERMINALS WILL ACCEPT STRANDED WIRE ONLY

WIRE COLOR/GAUGE (NFPA)
(unless otherwise specified)

208-600VAC: #14, BLK
120VAC: #16, RED
24VAC: #16, RED/BLK
NEUTRAL: #16, WHT
GROUND: GRN
24VDC: #18, BLU
24V COM (0VDC): #18, BLU/WHT
12VAC/VDC, #18, VIO
12V COM: #18, VIO/WHT
DRY (UNPOWERED): #18, YLW

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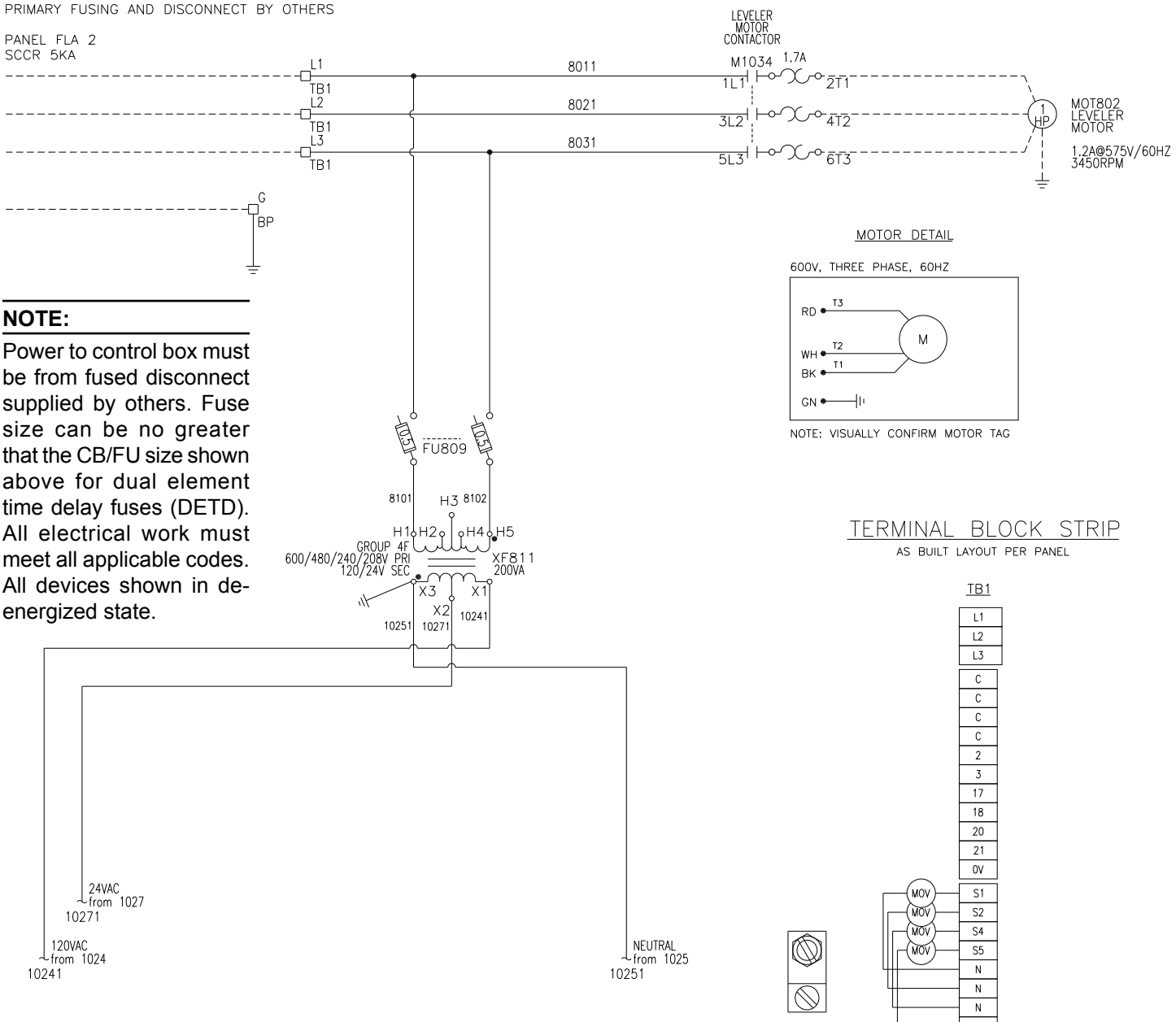
ELECTRICAL SCHEMATIC — 575-600V/3PH/60HZ

Fig. 36



NOTE:

Power to control box must be from fused disconnect supplied by others. Fuse size can be no greater that the CB/FU size shown above for dual element time delay fuses (DETD). All electrical work must meet all applicable codes. All devices shown in de-energized state.

WIRE LEGEND

——— PANEL WIRING
- - - - - - FIELD WIRING (BY OTHERS)
····· PC BOARD TRACES

NOTE:
TERMINALS WILL ACCEPT STRANDED WIRE ONLY

WIRE COLOR/GAUGE (NFPA)
(unless otherwise specified)

208–600VAC: #14, BLK
120VAC: #16, RED
24VAC: #16, RED/BLK
NEUTRAL: #16, WHT
GROUND: GRN
24VDC: #18, BLU
24V COM (0VDC): #18, BLU/WHT
12VAC/VDC, #18, VIO
12V COM: #18, VIO/WHT
DRY (UNPOWERED): #18, YLW

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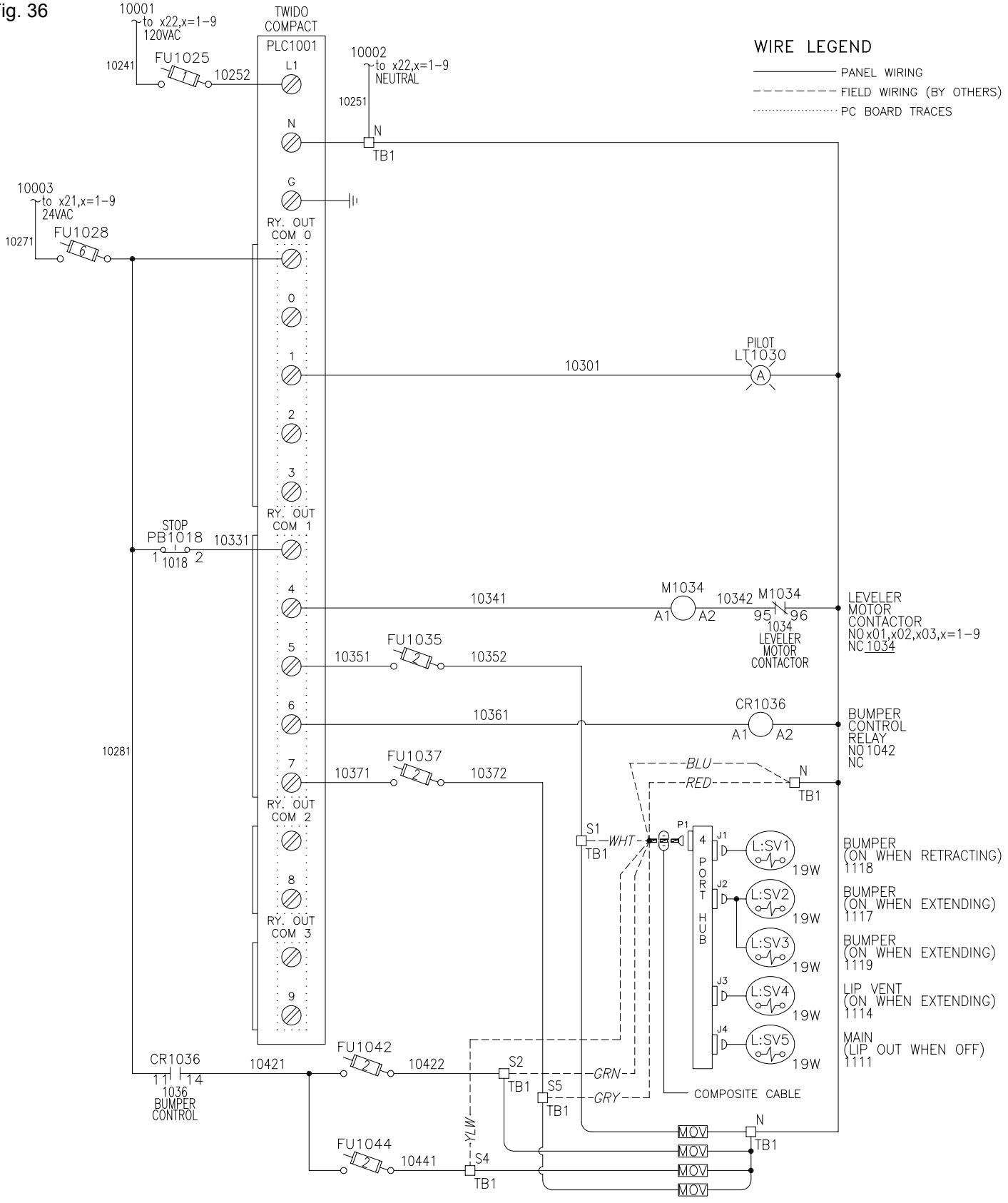
ELECTRICAL SCHEMATIC — PLC OUTPUT

Fig. 36



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ELECTRICAL SCHEMATIC — PLC INPUT

Fig. 37

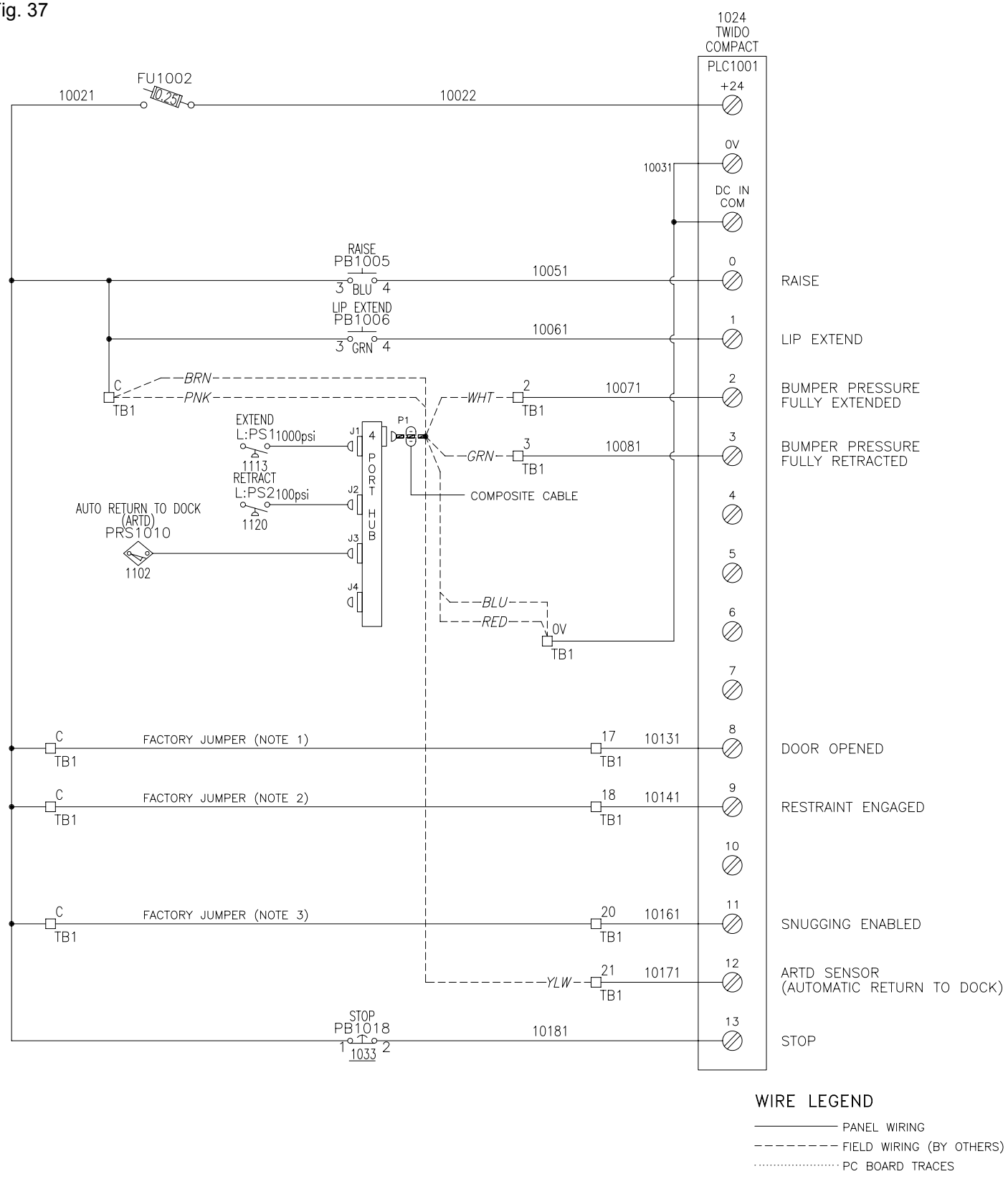

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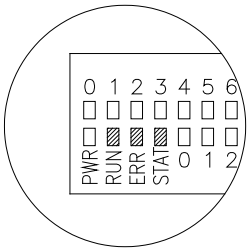
Fig. 38

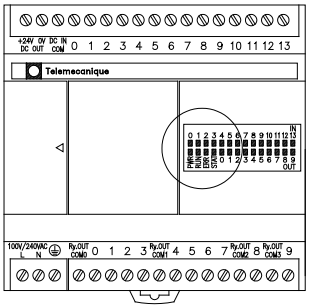
CONTROLLER FAULT CONDITIONS

RUN LED (green)
- ☐ Application not executed
- ▨ Controller is in RUN mode
- F Controller is in STOP mode, or execution fault (HALT)

ERR LED (red)
- ☐ OK
- ▨ Internal faults (watchdog, etc.)
- F Application not executable, or execution error (HALT)

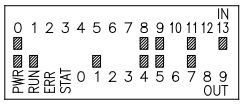
STAT LED (green)
- ☐ Controlled by the user or application through system bit %S69
- ▨ Controlled by the user or application through system bit %S69
- F Program transfer in progress



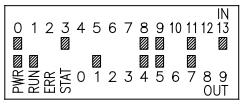


LEGEND
- ☐ LED OFF
- ▨ LED ON
- F LED flashing
- E LED ON or OFF (either condition may be present during the course of given sequence)

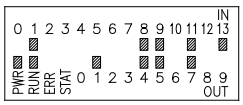
PLC STATUS INDICATORS



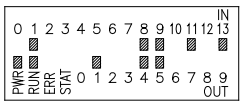
Press RAISE
Bumpers retracting



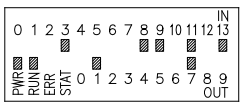
Press RAISE
Bumpers fully retracted



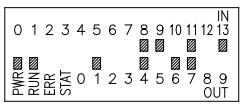
Press LIP EXTEND
Bumpers retracting



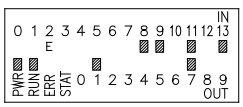
Press LIP EXTEND
Bumpers fully retracted



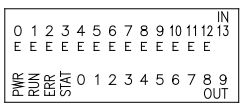
Floating
Bumpers fully retracted



Floating
Bumpers extending



Floating
Bumpers fully extended



Press STOP
All outputs off

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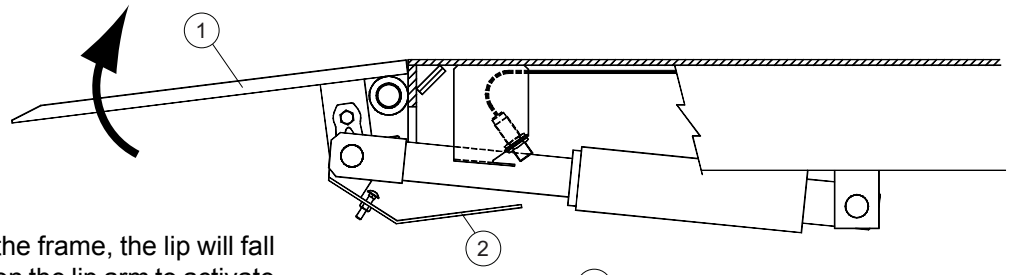
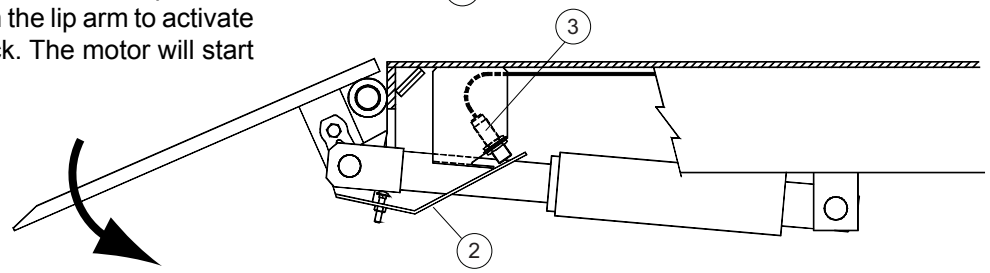
AUTO RETURN TO DOCK (A.R.T.D.) — OPERATIONS

1. When the lip (1) is extended the target bracket (2) rotates to the position shown.

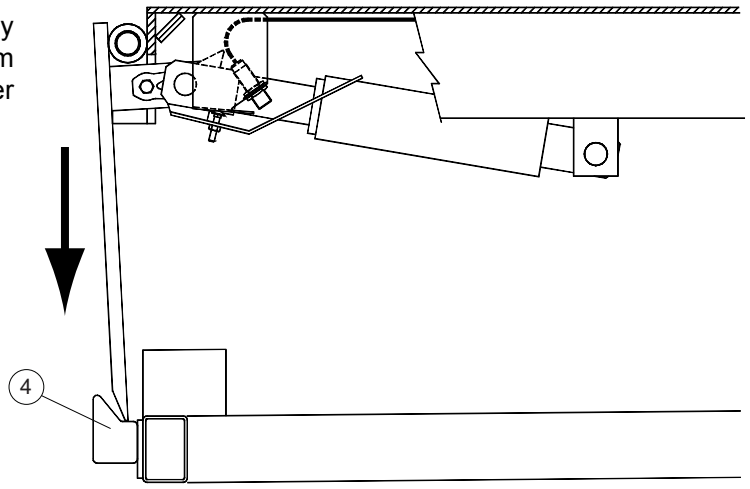
Fig. 39



2. When the leveler floats down to the frame, the lip will fall and cause the target bracket (2) on the lip arm to activate the proximity switch (3) on the deck. The motor will start and the leveler will raise.



3. When raised above the lip keepers (4), the lip will fully retract and the target bracket will be forced away from the proximity switch. The motor will stop and the leveler will float down until the lip rest in the keepers.



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AUTO RETURN TO DOCK (A.R.T.D.) — ADJUSTMENT

⚠DANGER

Do not enter the leveler pit unless the leveler is securely supported by maintenance struts and barriers are in place.

Failure to do the following could result in death or serious injury.

NOTE:

Secure the leveler in maintenance position with lip pendent

Proximity Switch

1. Adjust the proximity switch so the sensor face is 1/16" above the edge of the mounting bracket. See Fig 37. Tighten the sensor jam nuts.

Target

1. The target bracket is mounted on the lip cylinder clevis and is designed to pivot with some friction. The clamp holds the target in place against the clevis. See Fig. 40. Tighten the he clamp bolt so the target is free to rotate but holds its position if released.

NOTE:

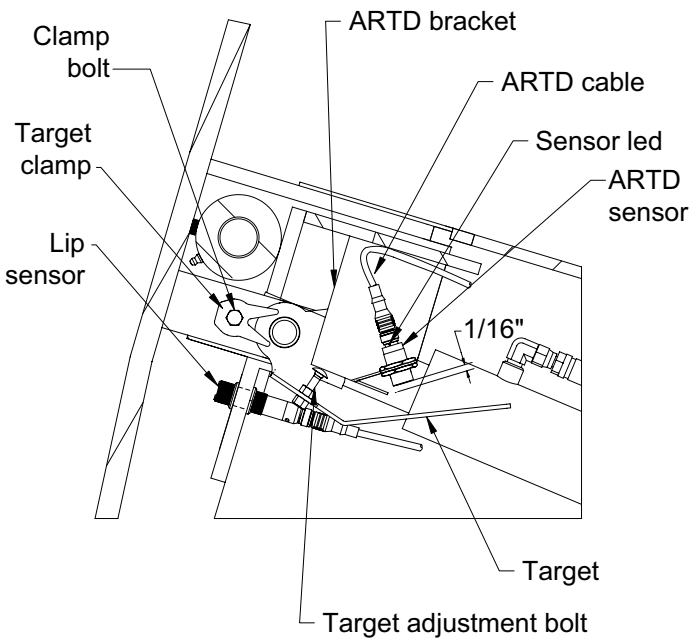
Lip must be fully retracted for the following step.

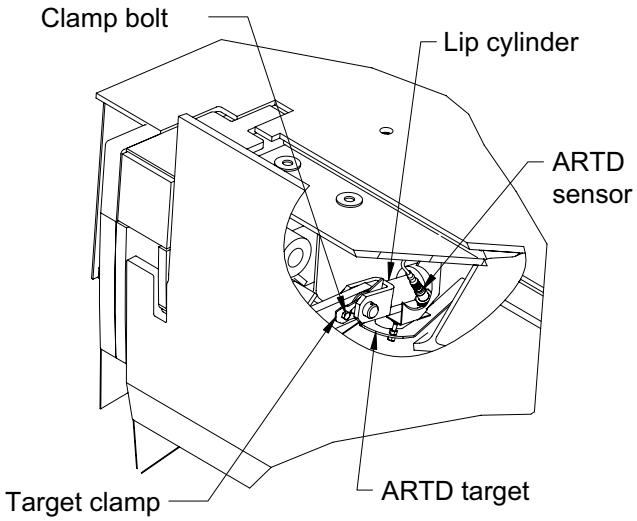
Target Adjustment Bolt

1. Loosen the target adjust bolt and rotate the target until the sensor LED illuminates. The head of the target adjustment bolt should be touching the sensor bracket. Adjust the bolt until the ARTD sensor LED extinguishes. Add 1/8th turn. Tighten jam nuts.

2. Confirm the target holds position. With the adjustment bolt touching the bracket and the sensor LED extinguished.

Fig. 40





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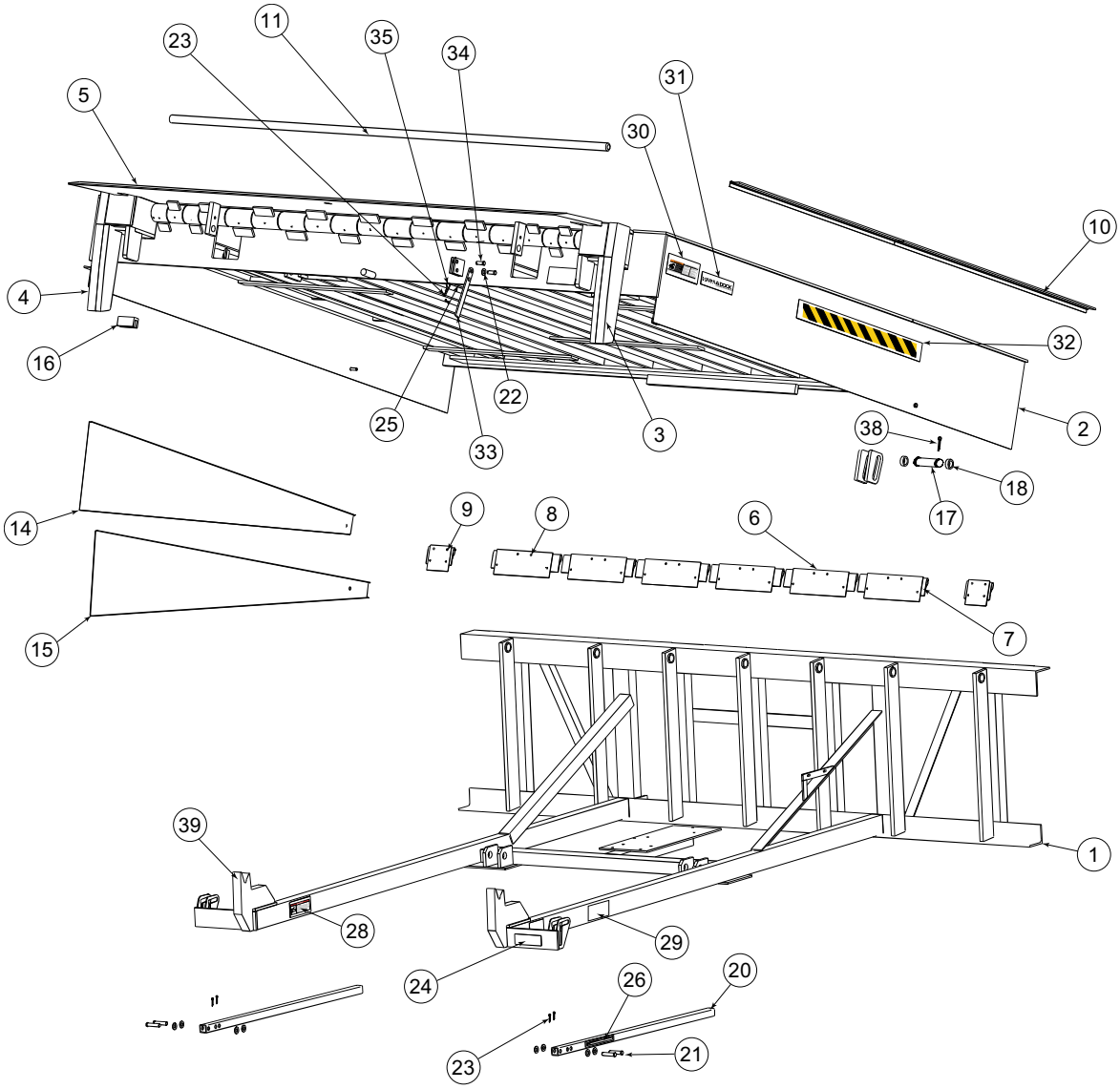
PARTS LIST — DOCK LEVELER

Fig. 41



⚠ WARNING

To ensure proper function, durability and safety of the product, only replacement parts that do not interfere with the safe, normal operation of the product must be used. Incorporation of replacement parts or modifications that weaken the structural integrity of the product, or in a way alter the product from its normal working condition at the time of purchase from 4Front Engineered Solutions, Inc. could result in product malfunction, breakdown, premature wear, death or serious injury.

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Item	Quantity	Part Description	800	1000	1200
1A	1	FRAME ASSY - DOCK LEVELER, 60K - 20" LIP	6003402	6003002	6004702
1B	1	FRAME ASSY - DOCK LEVELER, 60K - 18" LIP	6005525	6005526	6005527
2A	1	RAMP ASSY, DOCK LEVELER, 60K - DGL	6003401	6003001	6004701
2B	1	RAMP ASSY, DOCK LEVELER, 60K - STD	6004690	6004790	6004740
2C	1	RAMP ASSY, DOCK LEVELER, 80K - DGL	6007431	6007429	6006799
2D	1	RAMP ASSY, DOCK LEVELER, 80K - STD	6007430	6007428	6006798
3	1	BUMPER ASSY, RIGHT, 60K	6003005	6003005	6003005
4	1	BUMPER ASSY, LEFT, 60K	6003006	6003006	6003006
5A	1	LIP ASSEMBLY, 60K - 20" DGL	6003004	6003004	6003004
5B	1	LIP ASSEMBLY, 60K - 18" DGL	6003298	6003298	6003298
5C	1	LIP ASSEMBLY, 60K - 20" STD	6004686	6004686	6004686
5D	1	LIP ASSEMBLY, 60K - 18" STD	6005680	6005680	6005680
5E	1	LIP ASSEMBLY, 80K - 20" DGL	6006370	6006370	6006370
5F	1	LIP ASSEMBLY, 80K - 18" DGL	6007433	6007433	6007433
5G	1	LIP ASSEMBLY, 80K - 20" STD	6007401	6007401	6007401
5H	1	LIP ASSEMBLY, 80K - 18" STD	6007432	6007432	6007432
6	4	REAR W/SEAL ASSY. - MIDDLE	89172	89172	89172
7	1	REAR W/SEAL ASSY. - LH	6003094	6003094	6003094
8	1	REAR W/SEAL ASSY. - RH	6003095	6003095	6003095
9	2	REAR W/SEAL ASSY. - END	6003096	6003096	6003096
10A	2	W/SEAL NARROW BRUSH	328887	—	328887
10B	2	W/SEAL NARROW BRUSH	—	328879	328879
10C	2	W/SEAL NARROW BRUSH	—	328886	—
11D	1	HINGE PIN, 60K	5860392	5860392	5860392
11E	1	HINGE PIN, 80K	5862335	5862335	5862335
12	1	1ST STAGE TOE GUARD - RH (NOT SHOWN)	5860439	5861042	5862738
13	1	2ND STAGE TOE GUARD - RH (NOT SHOWN)	5860441	5861044	5862740
14	1	1ST STAGE TOE GUARD - LH	5860438	5861043	5862737
15	1	2ND STAGE TOE GUARD - LH	5860440	5861045	5862739
16	2	BUMPER BLOCKUP, UHMW	6003040	6003040	6003040
17	11	PIN-REAR HINGE	6003855	6003855	6003855
19	32	STS, #12-14 X 3/4, TEKS (NOT SHOWN)	215702	215702	215702

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PARTS LIST — DOCK LEVELER, continued

Item	Quantity	Part Description	800	1000	1200
18	7	REAR HINGE SPACER	5861382	5861382	5861382
20	2	MAINT. POSTS, DOCK LEVELER	6004731	6003108	6004723
21	4	PIN, CLEVIS, 1/2" DIA X 2-1/4" LG	231506	231506	231506
22	10	PW 1/2" BOLT SIZE, 9/16" HOLE	234121	234121	234121
23	5	COTTER PIN 1/8" X 3/4"	231341	231341	231341
24A	1	SERCO® NAMEPLATE (SMALL)	824002	824002	824002
24B	1	KELLEY® NAMEPLATE (SMALL)	921140	921140	921140
25	1	ARTD HAZARD LABEL	921075	921075	921075
26	2	HAZARD LABEL - MAINTENANCE STRUT	921074	921074	921074
27	2	BUMPER BLOCKUP, UHMW	6007434	6007434	6007434
28	1	HAZARD LABEL - ENTERING PIT	921070	921070	921070
29	1	SERIAL TAG	6009761	6009761	6009761
30	2	DECAL - HAZARD - LEVELER INFO	6008485	6008485	6008485
31	1	VERSADOCK LABEL	6003104	6003104	6003104
32	2	WARNING LABEL	138837	138837	138837
33	1	LIP PLATE MAINTENANCE BAR - DOCK LEVELER	6003106	6003106	6003106
34	2	PIN, CLEVIS, 1/2" X 1-1/4"	035049	035049	035049
35	1	1/8" DIA, HITCH PIN CLIP	231503	231503	231503
36	1	PLACARD (NOT SHOWN)	6003122	6003122	6003122
37	1	USER'S MANUAL (NOT SHOWN)	6003935	6003935	6003935
38	11	COTTER PIN	231342	231342	231342
39A	2	LIP KEEPER, 20" LIP	6005687	6003035	6005684
39B	2	LIP KEEPER, 18" LIP	6005688	6005682	6005685

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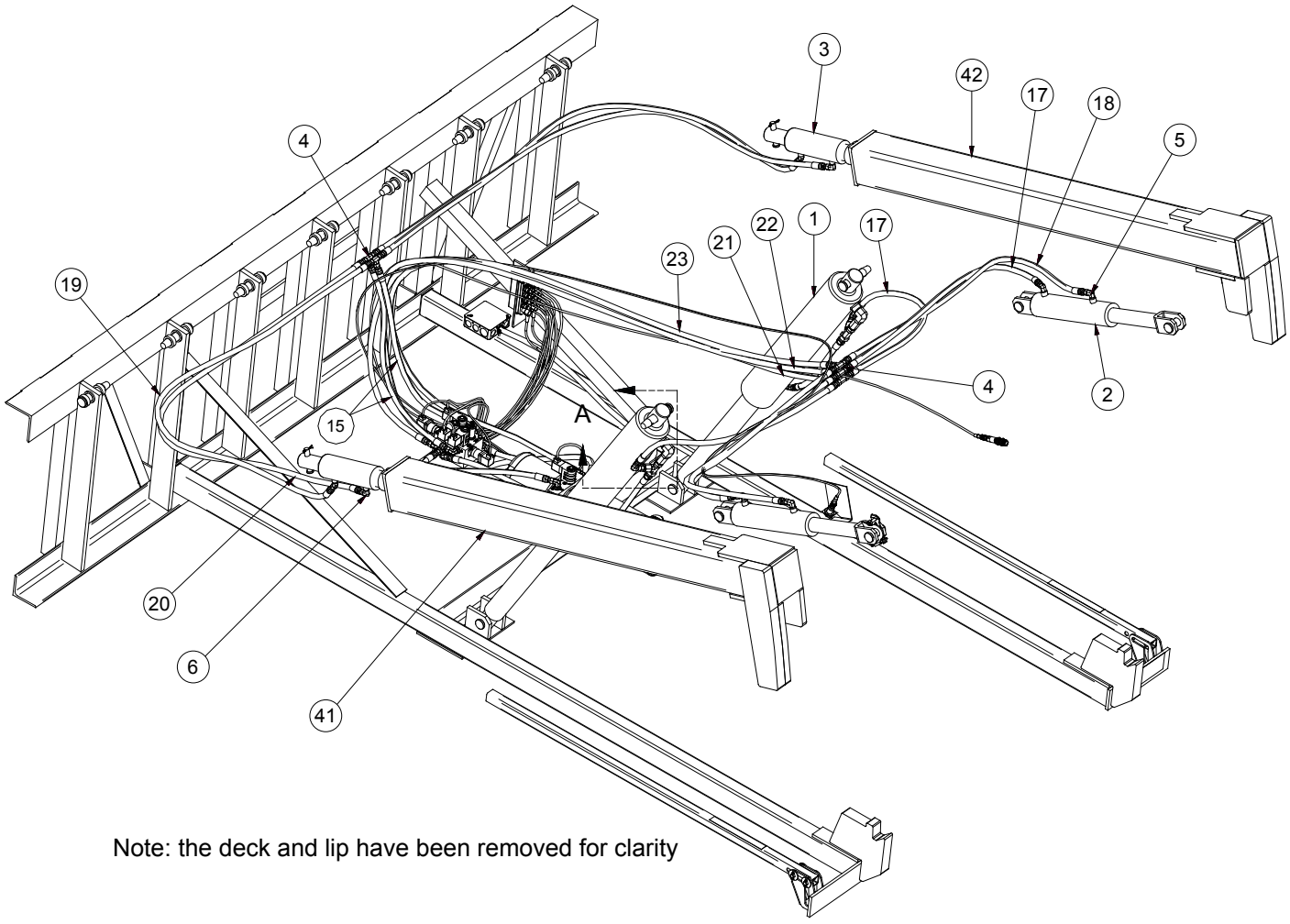
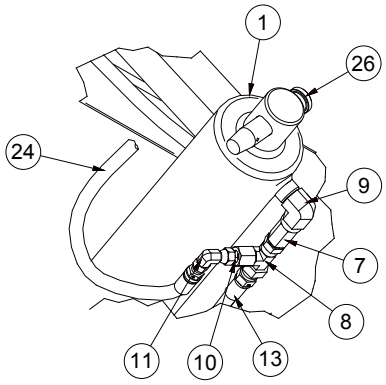
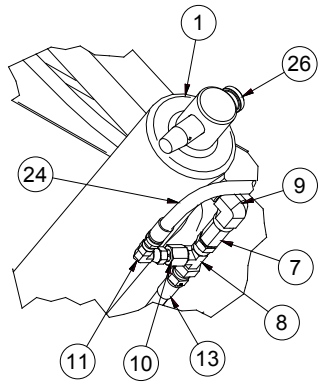
Fig. 42



Note: the deck and lip have been removed for clarity



8' assemblies hose 24
to main cylinder route is down



10' and 12' assemblies hose 24
to main cylinder route is up

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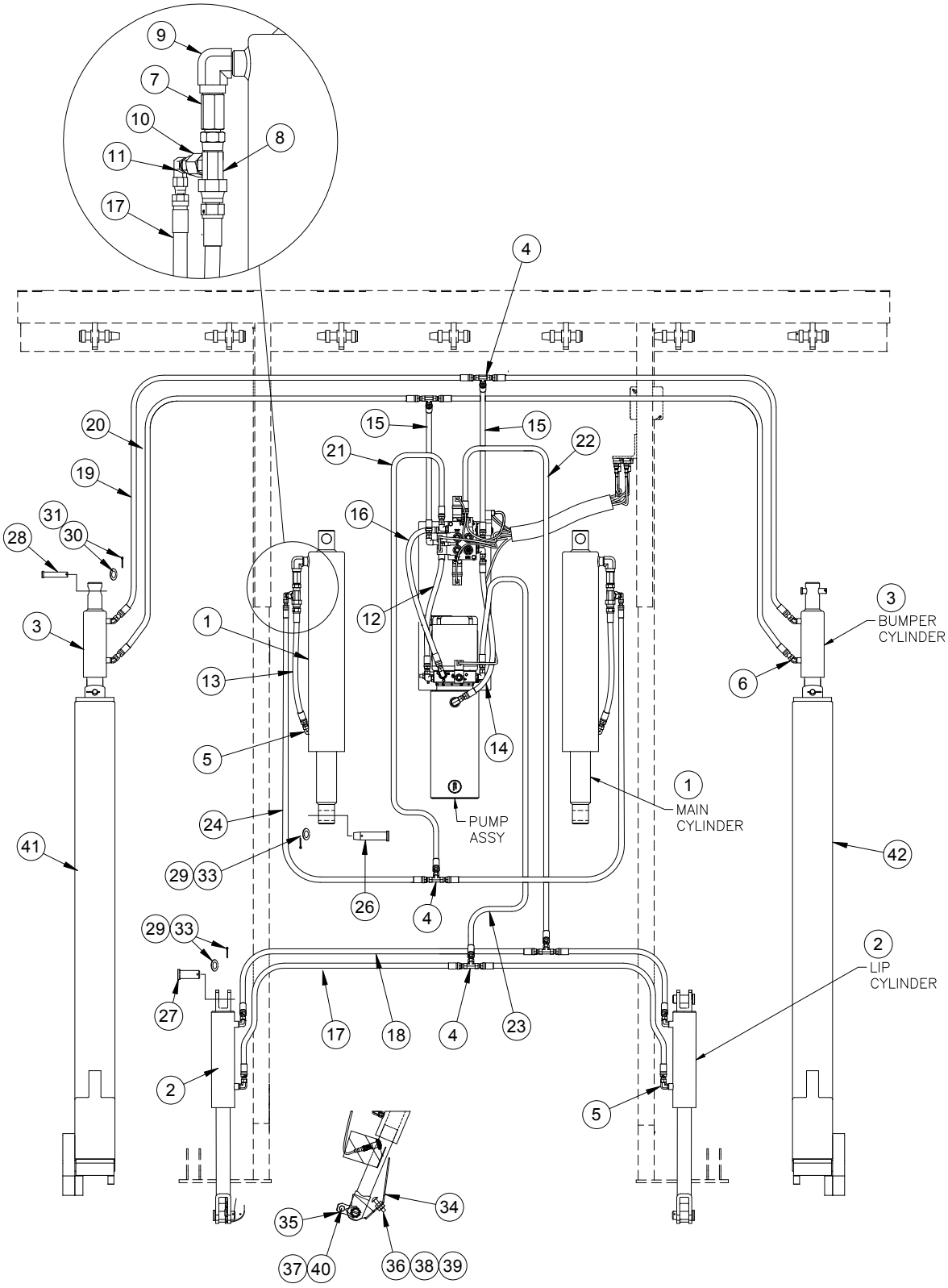
PARTS LIST — HYDRAULIC CYLINDERS AND HOSES

Fig. 43



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PARTS LIST — HYDRAULIC CYLINDERS AND HOSES, continued

Item	Quantity	Part Description	800	1000	1200
1	2	MAIN CYL 4" X 20 STK, DBL ACT	313563	313563	313563
2	2	LIP CYL 2 1/2X6 STROKE DBL. ACT	313043	313043	313043
3	2	CYLINDER: 2 1/2 DIA. X 3 STK , DBL ACT	6003030	6003030	6003030
4	5	FTG, MALE TEE, JIC 6	6000595	6000595	6000595
5	6	FTG, ELBOW NIPPLE , 6 JIC-M X 1/4"NPT	313106	313106	313106
6	4	FTG, MALE 45 DEG ELBOW, 6 JIC-M X 1/4"NPT	313219	313219	313219
7	2	VELOCITY FUSE-10GPM-DYNESCO	313239	313239	313239
8	2	FTG, SWIVEL NUT RUN TEE , 8 JIC	6003112	6003112	6003112
9	2	FTG, STREET ELBOW - 1/2"NPT -F X 1/2"NPT-M	313102	313102	313102
10	2	FTG, REDUCER, 8 JIC-F X 6 JIC-M	6003113	6003113	6003113
11	2	FTG, ELBOW, 90, 6 JIC-F SW X 6 JIC-M	313595	313595	313595
12	1	HOSE ASSY: 100R1, 3/8 ID x 17"- 6 JIC-F SWVL (C1- 17)	6003083	6003083	6003083
13	2	HOSE ASSY: 100R1, 3/8 ID x 20"- 8 JIC-F SWVL (MAIN CYL- 20)	313545	313545	313545
14	1	HOSE ASSY: 100R1, 3/8 ID - 6 JIC-F SWVL (RETN- 23)	6003081	6003081	6003081
15	2	HOSE ASSY: 100R1, 3/8 ID- 6 JIC-F SWVL (BUMP RET/EXT 24,27,30)	6014181	6003086	6003079
16	1	HOSE ASSY: 100R1, 3/8 ID- 6 JIC-F SWVL (C2- 26)	6004752	6004752	6004752
17	2	HOSE ASSY: 100R1, 3/8 ID- 6 JIC-F SWVL (LIP EXT 40,40,64)	6003084	6003084	6014186
18	2	HOSE ASSY: 100R1, 3/8 ID - 6 JIC-F SWVL (LIP RET 43,43,66)	6014182	6014182	6014185
19	2	HOSE ASSY: 100R1, 3/8 ID - 6 JIC-F SWVL (BUMP EXT 51,75,99)	6014183	6003110	6003087
20	2	HOSE ASSY: 100R1, 3/8 ID - 6 JIC-F SWVL (BUMP RET 58,80,105)	6014184	601422	6004725
21	1	HOSE ASSY: 100R1, 3/8 ID - 6 JIC-F SWVL (MAIN 66,93,95)	6014185	6014187	6004728
22	1	HOSE ASSY: 100R1, 3/8 ID - 6 JIC-F SWVL (LIP EXT 73,99,103)	8004730	6003087	6014188
23	1	HOSE ASSY: 100R1, 3/8 ID - 6 JIC-F SWVL (LIP RET 80,105,107)	6014222	6004725	6004724
24	2	HOSE ASSY: 100R1, 3/8 ID - 6 JIC-F SWVL (MAIN 40,35,35)	6003084	6004729	6004729
25	3.5 gal	HYDRAULIC OIL - AW15	328006	328006	328006
26	4	PIN, 1X3-1/2, DRILLED	5861066	5861066	5861066
27	4	PIN, CLEVIS, 5/8 X 3L	6003041	6003041	6003041
28	4	PIN, 1X2-1/8, DRILLED	5861063	5861063	5861063

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PARTS LIST — HYDRAULIC CYLINDERS AND HOSES, continued

Item	Quantity	Part Description	800	1000	1200
29	8	PLAIN WASHER: 1-1/16 X 2-1/2OD	234160	234160	234160
30	4	PW 1/2 BOLT SIZE-9/16 HOLE	234121	234121	234121
31	4	COTP 1/8X3/4 ZINC PLD PKGD IM	231341	231341	231341
32	4	COTP 1/8 x 1-1/4 ZINC PLD	231342	231342	231342
33	4	PIN,COTTER 5/32X2 ZINC PLD	6001832	6001832	6001832
34	1	TARGET: ARTD	5861838	5861838	5861838
35	1	CLAMP - ARTD	328551	328551	328551
36	1	CB 1/4-20 X 1 1/4" ZINC PLATED	213019	213019	213019
37	1	HB 5/16-18 UNC, 1 1/2 , GRD 5	212065	212065	212065
38	1	HEX NUT, 1/4-20UNC	214161	214161	214161
39	1	LN 1/4-20UNC ESLOK #10020 OR	214502	214502	214502
40	1	LN 5/16-18 NYLOK #10022 ZINC	214522	214522	214522
40	1	BUMPER ASSY, RIGHT-VDIII, 60K	6003005	6003005	6003005
42	1	BUMPER ASSY, LEFT-VDIII, 60K	6003006	6003006	6003006
43	1	ARTD WARNING LABEL	921075	921075	921075
44	3	CLAMP, DOUBLE TUBE, 11/16" DIA	6003042	6003042	6003042
47	2	HHMB 1/4-20 X 3-1/4, ZINC PLATED	6003047	6003047	6003047
48	7	HHMB 1/4-20 UNC X 2, ZINC PLATED	212008	212008	212008
50	4	HHMB 5/16 X 1, GRADE 5, ZINC PLATED	212054	212054	212054
51	10	LN 1/4-20 NYLOCK #10022, ZINC	214502	214502	214502
52	4	LN 5/16-18 NYLOCK #10022, ZINC	214522	214522	214522
53	6	HN 1/4-20, ZINC PLATED	214161	214161	214161
55	9	HN 3/8-16 FINISHED ZINC PLATED	214201	214201	214201
56	2	PW 1/4 BOLT SIZE - 5/16 HOLE	234081	234081	234081
57	8	PW 5/16 BOLT SIZE - 3/8 HOLE	234091	234091	234091
58	3	PW 3/8 BOLT SIZE	234101	234101	234101

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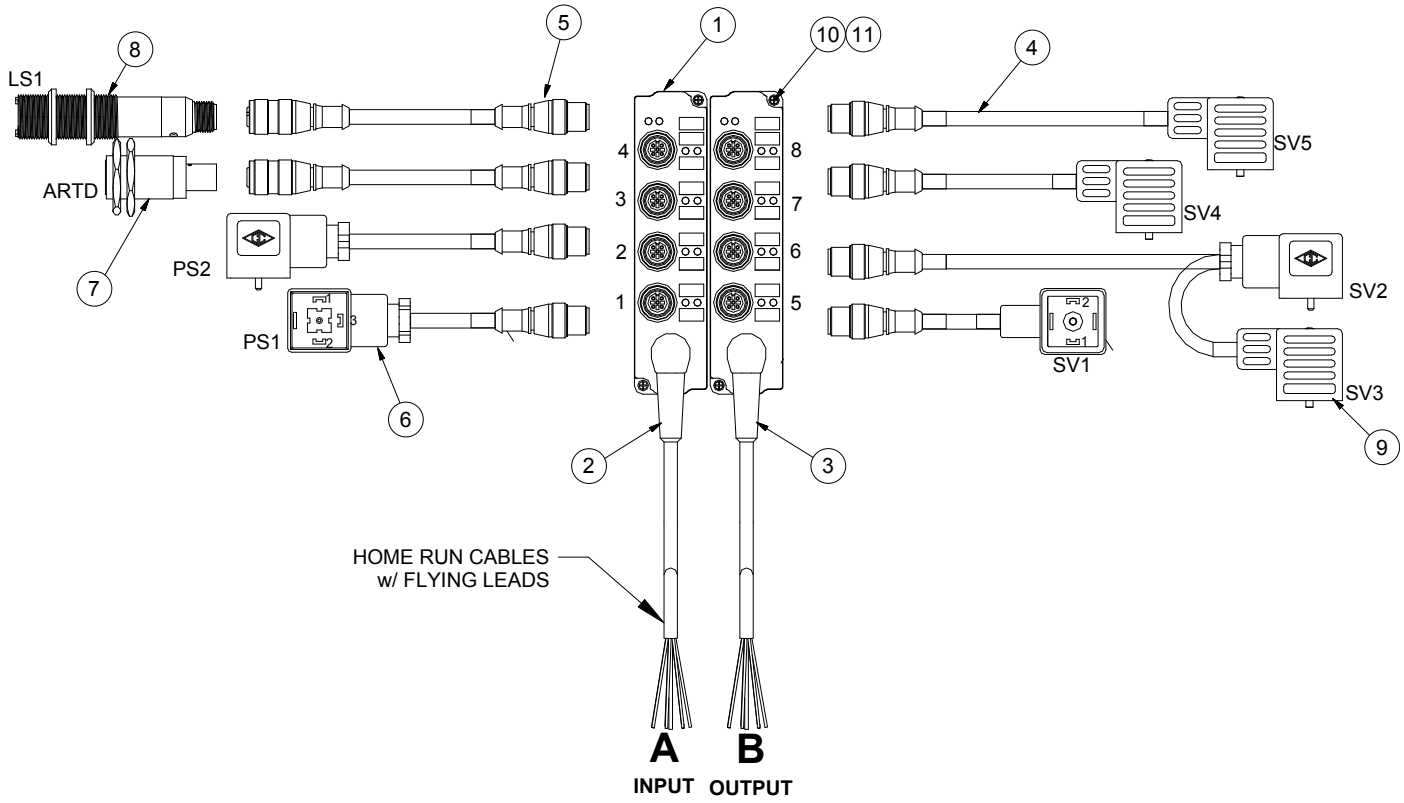
Fig. 44



Item	Quantity	Description	Part Number
1	2	JUNCTION BOX, 4 PORT, EUROFAST QD	6008051
2	1	HOME RUN CABLE, 8 WIRE, 90° QD EURO , 10M, GRAY (A-INPUT)	6008055
3	1	HOME RUN CABLE, 8 WIRE, 90° QD EURO , 10M, YELLOW (B-OUTPUT)	6014178
4	3	DIN CABLE ASSY VAS 22 DIN PLUG,1.2M LG, QD EURO MALE (SV1, 4 & 5)	6008053
5	2	CBLE ASSY, QD EURO, 4 M LG	6008695
6	2	DIN PLUG ASSY,43650A, 3 WIRE+ GND, QD-EURO MALE (PS1 & 2)	6014167
7	1	PROXIMITY SWITCH, QD EURO, 3 WIRE PNP (ARTD)	6008404
8	1	PE SENSOR, 18MM DIA, FIXED FIELD 50MM, DC, EURO-QD (LIP SENSOR)	6014173
9	1	CBLE ASSY, 2 DIN PLUG PARALLEL, QD EURO MALE, 1.2 M LG	6014175
10	4	#8-32UNC X 1"LG PAN HD SCREW-PHILLIPS, ZP	6000582
11	4	LN 8-32UNC NYLOK, ZP	214107

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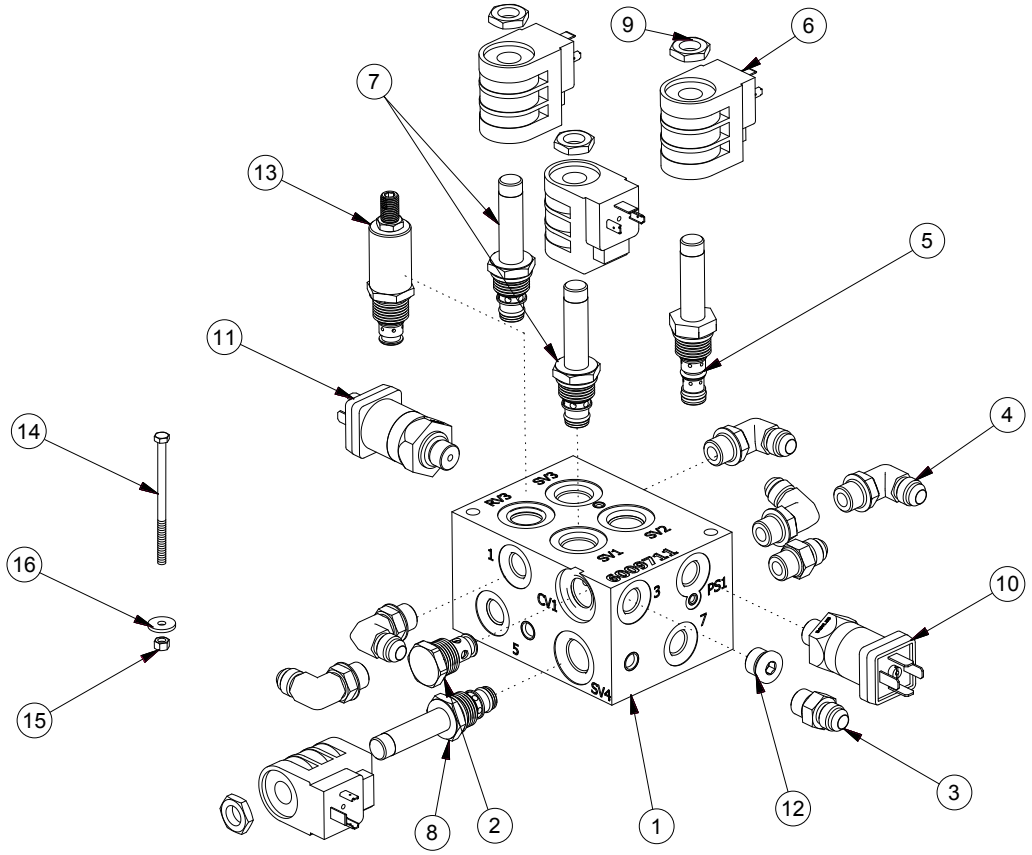
PARTS LIST — MANIFOLD ASSEMBLY

Fig. 45



Item	Quantity	Description	Part Number
1	1	MANIFOLD BLOCK, VERSA III HYDRAULICS	6009710
2	1	CHECK VALVE, DIRECT ACTING-GUIDED BALL (PB-CVC)	6006443
3	2	FTG, STRAIGHT 6-JIC X 6-SAE_ORB	6000717
4	5	FTG, STR THD ELBOW-90, 6-JIC-M X 6-SAE ORB-M, STL	313214
5	1	VALVE, 3W-2P, DIRECTION CONTROL SPOOL VALVE (SV2)	6013055
6	4	SOLENOID COIL, 24VAC, 1/2" TYPE P, DIN 43650	313564
7	2	SOLENOID VALVE, NC, PILOT OPERATED POPPET, PB-S2A, (SV1 & SV3)	6013221
8	1	SOLENOID VALVE, NC, PILOT OPERATED POPPET, PB-S2G, (SV4)	313569
9	4	RETAINING NUT, 1/2" SOLENOID	6011725
10	1	PRESSURE SWITCH, 1000 PSI, NO, DIN 43650 (PS1)	6013222
11	1	PRESSURE SWITCH, 100 PSI, NO, DIN 43650 (PS2)	6014096
12	1	FTG, PLUG, SAE-6 ORB, HEX SOCKET	6013223
13	1	VALVE, RELIEF, DIFFERENTIAL AREA, ADJUSTABLE HYDRAULIC (PB-RVD)	6013224
14	2	BOLT HEX HD 1/4-20UNC X 3 1/4LG ZP	6003047
15	2	1/4-20UNC NYLOCK NUT	214502
16	4	PLAIN WASHER 1/4 DIA	234081

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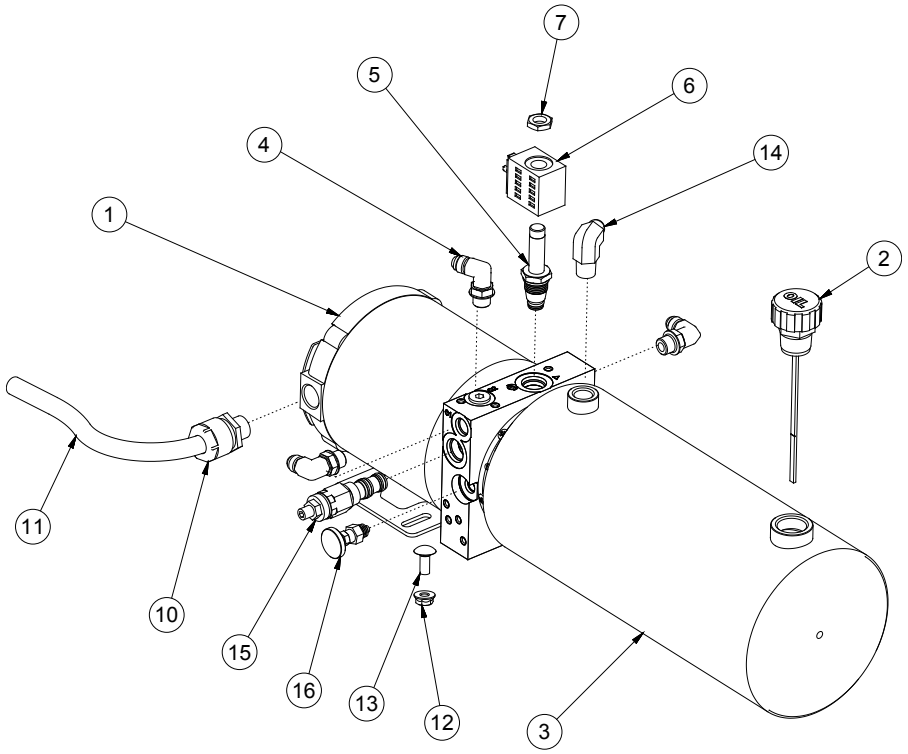
PARTS LIST — HYDRAULIC POWER UNIT

Fig. 46



Item	Quantity	Description	Part Number
1	1	HYDRAULIC POWER ASSY, 110-240V/1PH/ 50-60HZ HYDRAULIC POWER ASSY, 208-480V/ 3PH/ 50-60HZ HYDRAULIC POWER ASSY, 575V/ 3PH/ 50-60HZ	6012593 6012594 6012595
2	1	DIPSTICK / BREATHER CAP -5" LG, BHGR POWER UNITS	6013798
3	1	RESERVOIR, 1.3 GAL DUAL PORT, STEEL	6014176
4	3	FTG, STR THD ELBOW-90, 6-JIC-M X 6-SAE ORB-M, STL	313214
5	1	SOL VALVE, 2W2P, #8, NC, SPOOL,PB-S2G, (SV5)	313569
6	1	SOLENOID COIL 24VAC -1/2, TYPE P, DIN 43650	313564
7	1	RETAINING NUT, 1/2" SOLENOID	6011725
8	1	VOLTAGE LABEL - EXT. (ON PUMP) 120 VOLT VOLTAGE LABEL - EXT. (ON PUMP) 240 VOLT VOLTAGE LABEL - EXT. (ON PUMP) 480 VOLT VOLTAGE LABEL - EXT. (ON PUMP) 575 VOLT	921051 921052 921053 921054
9	1	PHASE LABEL- EXT. (ON PUMP) "SINGLE PHASE" PHASE LABEL- EXT. (ON PUMP) "THREE PHASE"	921026 921027
10	1	CABLE GRIP, 1/2" HUB, 5/8 CABLE	533424
11	1	POWER CABLE, SO 14/4 X 48" LG	172607
12	4	SERRATED FLANGE HEX LOCKNUT, 5/16-18UNC, ZP	6010661
13	4	5/16-18UNC X 1" LG ROUND HEAD CARRIAGE BOLT, ZP	6010662
14	1	FTG, MALE EL, 6-JIC-M X 3/8 NPT-M, STL	6012940
15	1	VALVE, PRESS. SEQ. DIRECT ACT CARTRIDGE	6011698
16	1	VALVE, NEEDLE, CARTRIDGE, ADJ, SAE 4 THRD (NV)	6011699

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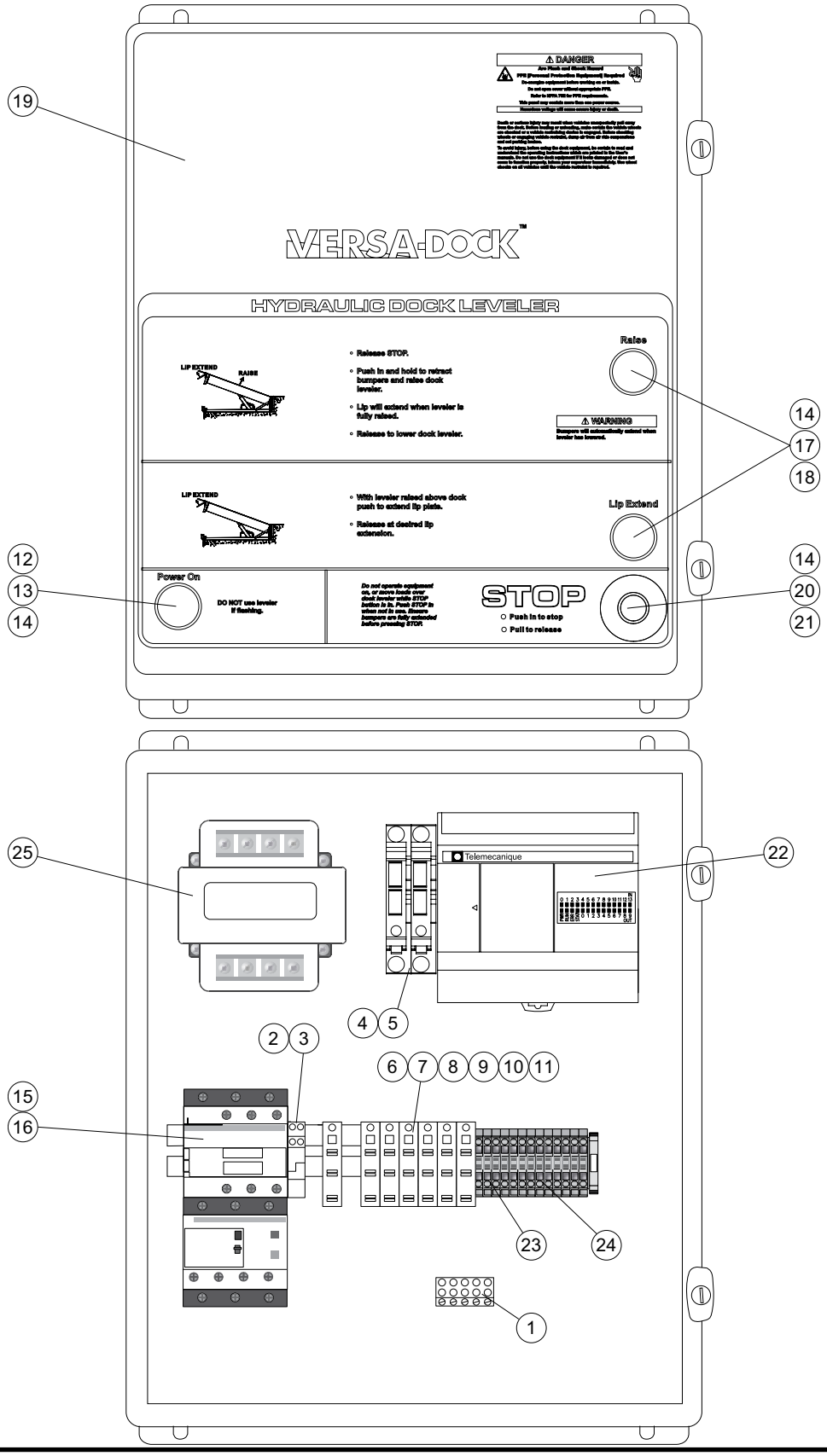
PARTS LIST — CONTROL PANEL

Fig. 47



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SINGLE PHASE UNITS

Item	Part Description	120V 1PH	208V 1PH	220-240V 1PH	Part Number
1	BAR, GROUND	1	1	1	6000559
2	RELAY, 2 POLE, MINI PCB, 24VAC	1	1	1	6000518
3	SOCKET, RELAY	1	1	1	6000522
4	BLOCK, FUSE, 1 POLE, FINGERSAFE BLOCK, FUSE, 2 POLE, FINGERSAFE	1	 1	 1	6006849 6006850
5	FUSE, TIME DELAY, 2A FUSE, TIME DELAY, 1A	1	2	 2	FNQ-R-2 FNQ-R-1
6	FUSED DISC TERM BLK, 1/4X1-1/4	7	7	7	6000538
7	FUSE, FAST ACTING	1	1	1	AGC-1/4
8	FUSE, TIME DELAY, 1A	1	1	1	MDA-1
9	FUSE, TIME DELAY, 6A	1	1	1	MDA-6
10	FUSE, TIME DELAY, 2A	3	3	3	MDA-2
11	FUSE, TIME DELAY, 3A	1	1	1	MDA-3
12	PILOT LIGHT, AMBER, NEMA 4/4X/13	1	1	1	633-002
13	LIGHT MODULE, AMBER, WITH BASE	1	1	1	6006842
14	BODY, MOUNTING COLLAR	4	4	4	6000515
15	IEC CONTACTOR, NR, 1-15HP/18A IEC CONTACTOR, NR, 0.5-7.5HP/9A	1	 1	 1	6000467 6000457
16	OVERLOAD RELAY, 12-18 AMP OVERLOAD RELAY, 9-13 AMP OVERLOAD RELAY, 5.5-8 AMP	1	 1	 1	6000478 6000477 6000476
17	PB, MOM, NEMA 4/4X/13	2	2	2	6000506
18	BLOCK, CONTACT, N.O.	2	2	2	632-228
19	PANEL DECAL — SERCO PANEL DECAL — KELLEY	1 1	1 1	1 1	6000534 6007884
20	PB, MUSHROOM, NEMA 4/4X/13	1	1	1	632-215
21	BLOCK, CONTACT, N.C.	2	2	2	632-229
22	TWIDO PLC, 100-240V	1	1	1	6001056
23	TERMINAL, 2 POLE	3	2	2	6007888
24	TERMINAL, 4 POLE	18	18	18	6006846
25	XFMR, 120/240V TO 24V, 350VA XFMR, 208-600V TO 120/24V, 200VA	1	 1	 1	6006811 6012568

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PARTS LIST — CONTROL PANEL, continued

THREE PHASE UNITS

Item	Part Description	208V 3PH	230-240V 3PH	460-480V 3PH	575-600V 3PH	Part Number
1	BAR, GROUND	1	1	1	1	6000559
2	RELAY, 2 POLE, MINI PCB, 24VAC	1	1	1	1	6000518
3	SOCKET, RELAY	1	1	1	1	6000522
4	BLOCK, FUSE, 1 POLE, FINGERSAFE BLOCK, FUSE, 2 POLE, FINGERSAFE	 1	 1	 1	 1	6006849 6006850
5	FUSE, TIME DELAY, 2A FUSE, TIME DELAY, 1A FUSE, TIME DELAY, 1/2A	2	 2	 2	 2	FNQ-R-2 FNQ-R-1 FNQ-R-1/2
6	FUSED DISC TERM BLK, 1/4X1-1/4	7	7	7	7	6000538
7	FUSE, FAST ACTING	1	1	1	1	AGC-1/4
8	FUSE, TIME DELAY, 1A	1	1	1	1	MDA-1
9	FUSE, TIME DELAY, 6A	1	1	1	1	MDA-6
10	FUSE, TIME DELAY, 2A	3	3	3	3	MDA-2
11	FUSE, TIME DELAY, 3A	1	1	1	1	MDA-3
12	PILOT LIGHT, AMBER, NEMA 4/4X/13	1	1	1	1	633-002
13	LIGHT MODULE, AMBER, WITH BASE	1	1	1	1	6006842
14	BODY, MOUNTING COLLAR	4	4	4	4	6000515
15	IEC CONTACTOR, NR, 0.5-7.5HP/9A	1	1	1	1	6000457
16	OVERLOAD RELAY, 4-6 AMP OVERLOAD RELAY, 1.6-2.5 AMP	1	1	 1	 1	6000475 6000473
17	PB, MOM, NEMA 4/4X/13	2	2	2	2	6000506
18	BLOCK, CONTACT, N.O.	2	2	2	2	632-228
19	PANEL DECAL — SERCO PANEL DECAL — KELLEY	1 1	1 1	1 1	1 1	6000534 6007884
20	PB, MUSHROOM, NEMA 4/4X/13	1	1	1	1	632-215
21	BLOCK, CONTACT, N.C.	2	2	2	2	632-229
22	TWIDO PLC, 100-240V	1	1	1	1	6001056
23	TERMINAL, 2 POLE	3	3	3	3	6007888
24	TERMINAL, 4 POLE	18	18	18	18	6006846
25	XFMR, 208-600V TO 120/24V, 200VA	1	1	1	1	6012568

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LIMITED WARRANTY INFORMATION

THIS LIMITED WARRANTY IS 4FRONT'S SOLE AND EXCLUSIVE WARRANTY WITH RESPECT TO THE DOCK LEVELER AND IS IN LIEU OF ANY OTHER GUARANTEES OR WARRANTIES, EXPRESS OR IMPLIED

4FRONT warrants that this DOCK LEVELER will be free from flaws in material and workmanship under normal use for a period of one (1) year from the earlier of 1) 60 days after the date of initial shipment by 4FRONT, or 2) the date of installation of the DOCK LEVELER by the original purchaser, provided that the owner maintains and operates the DOCK LEVELER in accordance with this User's Manual.

Hydraulic Limited Warranty: The hydraulic power unit and cylinders for this dock leveler are warranted to cover the cost of replacement costs only for an extended period of four (4) years beyond the base warranty period.

In the event that this DOCK LEVELER proves deficient in material or workmanship within the applicable Limited Warranty period, owner shall so notify 4FRONT, and 4 Front will, at its option:

1. Replace the DOCK LEVELER, or the deficient portion(s) thereof, without charge to the owner; or

2. Alter or repair the DOCK LEVELER, on site or elsewhere, without charge to the owner.

This Limited Warranty does not cover any failure caused by improper installation, abuse, improper operation, negligence, or failure to maintain and adjust the DOCK LEVELER properly. Parts requiring replacement due to damage resulting from vehicle impact, abuse, or improper operation are not covered by this warranty. 4FRONT DISCLAIMS ANY RESPONSIBILITY OR LIABILITY FOR ANY LOSS OR DAMAGE OF ANY KIND (INCLUDING WITHOUT LIMITATION, DIRECT, INDIRECT, CONSEQUENTIAL OR PUNITIVE DAMAGES, OR LOST PROFITS OR LOST PRODUCTION) arising out of or related to the use, installation or maintenance of the DOCK LEVELER (including premature product wear, product failure, property damage or bodily injury resulting from use of unauthorized replacement parts or modification of the DOCK LEVELER). 4FRONT's sole obligation with regard to a DOCK LEVELER that is claimed to be deficient in material or workmanship shall be as set forth in this Limited Warranty. This Limited Warranty will be null and void if the original purchaser does not notify 4FRONT's warranty department within ninety (90) days after the product deficiency is discovered. .

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, INCLUDING, BUT NOT LIMITED TO, A WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, ALL OF WHICH 4FRONT HEREBY DISCLAIMS.

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Please direct questions about your hydraulic dock leveler to your local distributor or to 4Front Engineered Solutions, Inc.

Your local 4Front Engineered Solutions, Inc. distributor is:

Corporate Head Office:

1612 Hutton Dr. Suite 140
Carrollton, TX. 75006
Tel. (972) 466-0707
Fax (972) 323-2661

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